

AMERICAN FRUIT GROWER

Vol. XXXIX
No. 1



January 1919



Ten Cents
a Copy



Edited by Samuel Adams

"I Got Enough Money From This One Crop of Stark Delicious to Pay For My Land, Trees And For ALL My Labor"

—Horace Rainey

above photo of Horace Rainey's young Stark Delicious orchard in Maury Co., Tenn., shows what this variety will do even on rocky land. North, East, South, West, and in all soils it has equal crop records—the Universal Apple.

"I Attribute This Bumper Crop To the Extraordinary Health and Vigor of These Stark Delicious Trees."

"In my 40 years of experience I have never seen a better crop—simply grand and magnificent. It far surpassed my utmost expectations.

The fruit was far above the average in size and color and sold readily at a fancy price.

I got enough from this one crop of Stark Delicious to pay for my land, trees and for all my labor.

I gathered 25 bushels or more from many of the trees. Not a limb in this Stark Delicious orchard was broken, even with the tremendous

crop, although the limbs bent to the ground. "Had I known what I do now, I would have planted the whole 70 acres to this one variety—genuine Stark Delicious!"

Horace Rainey, Maury Co., Tenn.

Another man, with just room for a few trees—just a little backyard orchard—finds Stark Delicious equally profitable. Here's a case of

\$92.75 Worth of Fruit Raised In Little Backyard Orchard

Some few years ago Kirby S. Bennett, Chase Co., Kansas, planted a few genuine Stark trees in a little 50 x 100-ft. backyard orchard. Last year alone his profit from the crop off those few trees amounted to \$92.75.

Another man, C. W. Woodford in Lawrence

Co., Mo., planted 18 genuine Stark Trees in a little $\frac{1}{2}$ acre of spare land. For years now he has profited from \$180.00 to \$200.00 per year from the crop gathered from those 18 trees. Just think what this means! An acre of these Stark Trees at this rate would yield \$1,440.00 to \$1,600.00 per year!



Stark Delicious

The Most Famous STARK BRO'S Fruit Discovery

Have you ever eaten one of these great, big, glowing red apples? You see it pictured and exhibited everywhere. The apple with the beautiful, flashing color—with its deep crimson skin blending off to gold at its stem and its blossom ends. The apple so quickly recognized by its five knobs at the blossom end—and its tender, crisp, juice-laden flesh. The apple with the wondrous, spicy aroma—and a flavor far superior to that of the finest, most luscious pear that ever delighted your palate. No wonder such a fruit tops the market everywhere! No wonder those who have planted genuine Stark Delicious trees throughout America are reaping rich rewards!

The fruit it bears is not only "the finest apple in all the world," as

Luther Burbank declares, but the Stark Delicious tree is all that Thos. F. Rigg, Iowa's famous Horticulturist and Orchardist, says it is—"The ideal fruit tree." As E. P. Taylor, Horticulturist of University of Idaho, says: "The Stark Delicious tree is now growing in every state and is adapted to a remarkable range of climate and soil conditions." Its vigorous growing qualities (even in the poorest soil), its young and steady and heavy bearing habits, its great sturdiness and, above all, its astonishing hardiness, are the reasons why it is being planted so plentifully by the shrewdest orchardists and landowners in every state in America and in Canada. These also are the reasons why you should plant Stark Delicious trees.

Get FREE 1919 Book—Gives Secrets of Orchard Success—Send Coupon

Do that to post yourself. It is a remarkable book. A better book of its kind was never published. It gives you the benefit of 102 years of nursery and orcharding experience.

points the sure path to orchard profits, and tells you how to select the fruit trees (of all varieties) and berry bushes that will do best and bear best in your section. Send Name and Address on Coupon or Post Card For Free Copy Today!

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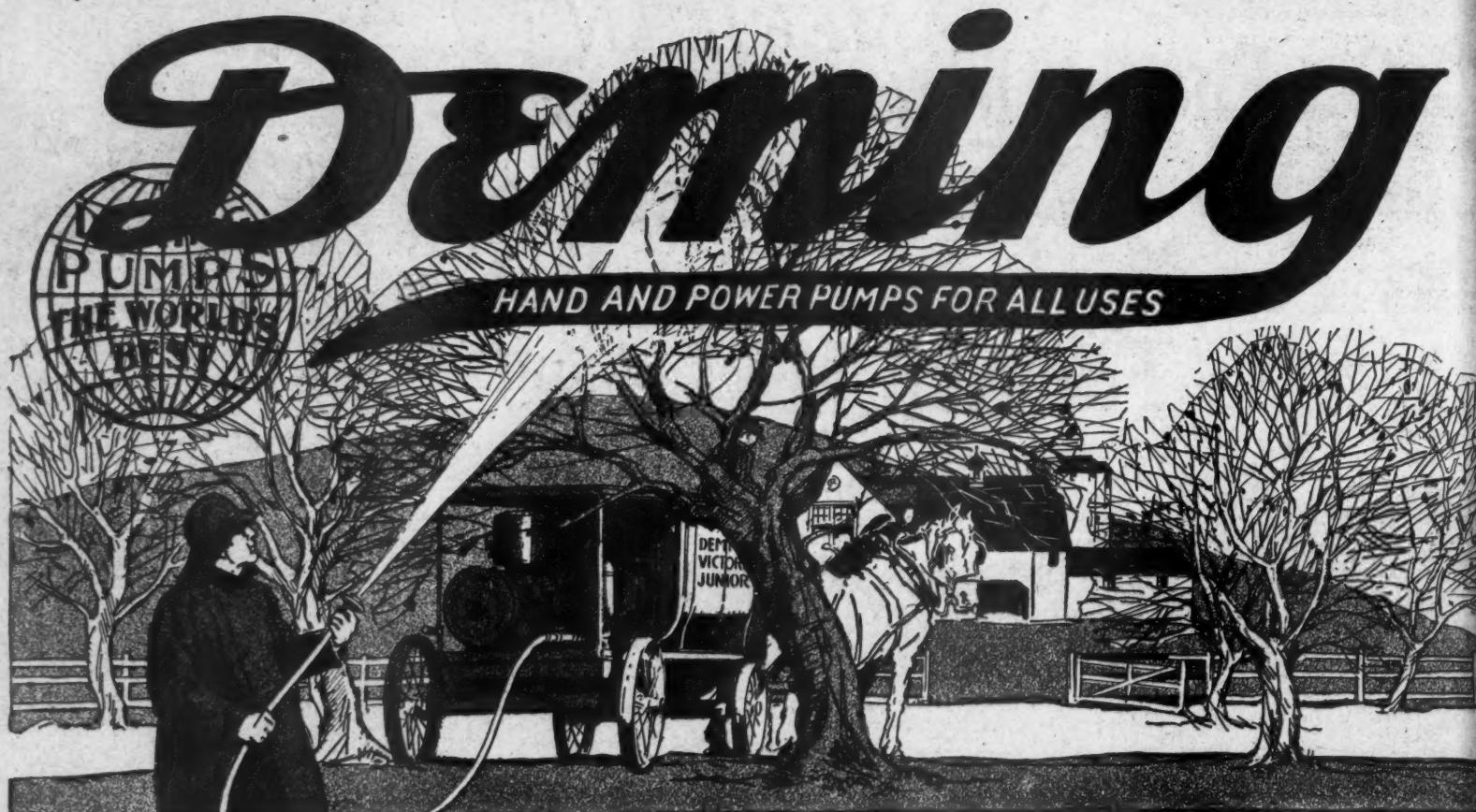
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For Greenhouses, Small Orchards, Gardens and Field Work
An all-around utility sprayer that cannot be beaten. Sprays live stock and is strong and durable enough to make a splendid whitewashing outfit—24-gallon tank.

FORTY years of effort and ceaseless striving to attain the top notch of efficiency in pump operation have made "Deming Pumps the World's Best" and Deming Sprayers the leaders in labor and time-saving improvements.

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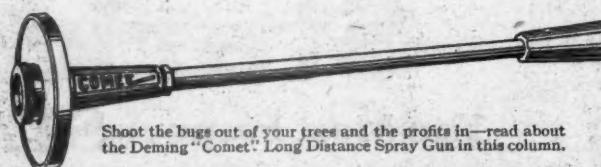
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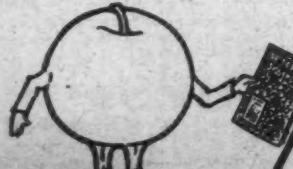
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100 AN AGATE LINE FLAT, OR \$14.00 PER INCH.
Classified, 15c a word.

AMERICAN FRUIT GROWER

A consolidation of Green's Fruit Grower, Rochester, N. Y., Established 1880;

The Fruit Grower, St. Joseph, Mo., Established 1889;

American Fruit Grower, Charlottesville, Va., Established 1915

Published monthly by AMERICAN FRUIT GROWER CO., Inc.

329 Plymouth Court, CHICAGO, ILL.

Eastern Office: Rochester, N. Y. Home Office: Charlottesville, Va.

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Special Advertising Representatives

JOHN M. BRANHAM CO.

New York Chicago Detroit St. Louis Atlanta

Entered as second-class matter Oct. 17, 1917, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

OL. XXXIX

JANUARY, 1919

No. 1

Small Fruits for the Home Market

Starting and Caring for Strawberries, Raspberries and Blackberries

W. J. Green, Ohio Experiment Station

OIL requirements are much the same for strawberries, raspberries and blackberries, but blackberries will live fairly well on a thin soil, where the other two would prove unsatisfactory. A soil in which potatoes thrive is usually sufficient for strawberries and raspberries. A friable clay loam, well drained, is better than a stiff clay or light sand. A soil that retains moisture but is not wet is suitable for these fruits. A considerable elevation above the surrounding country gives comparative freedom from spring frosts.

Strawberries—Starting the Bed

A site for a strawberry bed should be selected where the soil has been under cultivation for several years and at least a moderate amount of manure has been used and well incorporated into the

Better results, as far as size of berries is concerned, are obtained by removing half of the runners or more before they become fully rooted. The removal of a part of the plants increases the size of the fruit of those remaining and does not greatly reduce the yield. If rigid restriction of runners is practiced the rows may be placed nearer together.

If berries of unusually large size are desired, the plants are set 1 foot apart in the rows and the rows 2½ feet apart. The runners are cut off close to the plants as fast as they appear. This is called the hill system but is seldom followed except by amateurs because of the labor required to give best results.

For the home garden the wide matted

vent the soil freezing but to keep it from thawing and consequent heaving of plants when the soil freezes again. The mulch does, however, retard freezing of the soil. The soil often freezes to twice the depth where bare as where mulched. Deep freezing is often harmful to strawberry plants as they do not root deeply. The real purpose of the mulch is to keep the soil moist and to prevent the berries from becoming dirty. It serves another purpose also in that the soil where mulched is easy to put in condition for other crops.

Caring for Old Beds

A strawberry bed may be kept one year or more. The first crop borne by a bed consists of larger and more beautiful berries than that from an older bed. The usual custom is to fruit a bed but once, but there are exceptions to this rule and often with excellent reasons. Rarely is a bed retained for a longer period than 2 years. A bed in good condition will yield more berries the second than the first season, but usually they are of a reduced size. It usually requires more labor to clean and put an old bed in order than to plant and care for a new one.

It is difficult to put an old bed in order without removing or burning the mulching material. Burning over an old bed leaves it in condition to do the necessary work of reconstruction, provided the weather is suitable. Burning should not be done in a very dry time but when the soil is quite moist.

The strawberry plants and weeds are first mowed, which is done soon after the berries are picked. Within a day or two the mulch is burned and at once a furrow is turned away from the center of the row on each side. There should be a strip 8 to 10 inches wide left of each row.

The entire surface is harrowed at once with a slant-toothed harrow running the same direction as the rows. There will be some weeds to remove from the rows with

the work a month or more, it will likely be inadvisable to do more than to make a narrow pathway between the rows, leaving nearly all the old plants untouched. This plan gives unsatisfactory results, but in an exceedingly dry season there may be no alternative.

In case the plan of burning has succeeded and the runners begin to start freely the bed is almost sure to repay the best of care. One hundred pounds of nitrate of soda per acre, sprinkled along the rows, and two hundred pounds of acid phosphate will give the plants a good start. On very fertile soil nitrate of soda may not give results, but it is advisable to use acid phosphate both at planting time and when the bed is renewed. Under such conditions as exist where strawberry culture is carried on after the most approved methods there can be no serious shortage of nitrogen.

There is a lack of phosphoric acid in most soils, however, and the use of manure does not remedy the condition fully. Acid phosphate is needed in most cases to supply the deficiency in both manure and soil. It is more profitable to use some acid phosphate to reinforce the manure than to employ manure alone.

The choice of varieties is difficult to make, but the matter is simplified by first determining how the crop is to be disposed of.

For near market the following are excellent: Sample, Parson's Beauty, Senator Dunlap, Haverland; for distant market: Warfield, Gandy, Aroma.

Early and midseason: Fairfield, Haverland, Senator Dunlap.

For canning: Warfield, Senator Dunlap, Gandy.

For table quality: Wm. Belt, Bubach, Sample, Marshall.

Late ripening: Chesapeake, Gandy.

Fall bearing: Progressive (very prolific and likely to bear too heavily causing too much small fruit), Superb (fruit large and of good quality).

Plants of the fall-bearing sorts should be set very early in the spring. They will bloom soon after planting, but all blossoms

Strawberry Bed After the First Harvest, Prepared for the Second Year's Crop

or where some leguminous crop has been grown recently. This is for the purpose of increasing the water-holding capacity of the soil quite as much as to improve its fertility. The necessity for using that has been under clean cultivation due to the fact that white grubs are less serious in such soil than in that which recently been in sod. The white grub is a serious enemy to strawberry plants, in no other way can it be so surely eradicated as by choosing soil which has few if any white grubs in it.

The best manner of preparation of soil for a strawberry bed is to plow the ground in the fall or very early in the spring.

Plowed ground should be worked with a harrow or corf cultivator as early in

spring as it is in proper condition. It

should be stirred frequently with a harrow

as the plants are set. Spring-plowed

should be treated in the same manner,

in order to put it in a friable condition and

moisture.

The soil is stirred frequently the plants

are set as late as the middle of May in

latitude, provided the weather is favorable.

but ordinarily it is far better to plant

them early in April. Set the plants 18

inches apart in the row and space the rows

apart. Cultivation should be thorough

during the season. Commonly the

plants are allowed to grow without re-

striction, but in a favorable season for

the plants become matted thickly

the rows and cover a space nearly 2 feet

row is satisfactory while for commercial purposes the narrow, or restricted, row is best in most cases.

Cultivation

Nothing short of clean culture will answer for the first season of a strawberry bed. Weeds must be kept from growing and the soil stirred frequently in order to conserve moisture. Perennial and biennial weeds, which live over winter, will be extremely troublesome unless clean culture is given during the entire season.

As soon as freezing weather begins the strawberry bed should be mulched. Almost any kind of covering in the form of a litter will serve as a mulch. Straw is more often used than anything else and is as good as any other kind of material. Stable manure is undesirable on account of weed seeds which it usually contains. The covering should be 3 or 4 inches thick before settling.

It is not to be disturbed in the spring except the part just above the rows, from which enough is taken to allow the plants to get through. Any weeds springing up should be pulled as it is not a good plan to disturb the mulch between the rows. If forest leaves are used they should be spread between the rows and covered with straw to prevent them from being blown away. Leaves without straw do not form a serviceable mulch, but leaves and straw together are better than straw alone.

Mulching is practiced not only to pre-

vent the soil freezing but to keep it from thawing and consequent heaving of plants when the soil freezes again. The mulch does, however, retard freezing of the soil. The soil often freezes to twice the depth where bare as where mulched. Deep freezing is often harmful to strawberry plants as they do not root deeply. The real purpose of the mulch is to keep the soil moist and to prevent the berries from becoming dirty. It serves another purpose also in that the soil where mulched is easy to put in condition for other crops.

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come from the base of the plants and die after fruiting. There are no suckers from the underground stems as in case of red raspberry and blackberry plants. The canes of red raspberry plants are really suckers from underground stems, but they are commonly called roots. These suckers, or sprouts, come in large numbers, completely covering the ground in a few years in neglected plantations. Purple raspberry plants have the same habits of growth as the black. Purple varieties are results of a cross of red and black sorts. Yellow varieties sometimes come from seed of both black and red sorts.

Planting

Early spring is the best time to set raspberry plants but on sandy soil they may be planted in the fall. The canes of the black and the purple varieties start into growth very early in the spring; hence early planting is advisable. It is possible, however, to transplant them as late as the middle of May in favorable weather. This is done when the young canes are a few inches in height. At this time the shoots are tough and are not broken as easily as when they are young and tender. The same is true regarding the advisability of early planting of the red sorts, and they may also be set late in damp weather. On heavy clay soil fall planting of black varieties is unsafe because the young tender sprouts are unable to break through the stiff crust of soil. The red sorts may be planted on heavy soil in the fall but should be set quite deep so that they will not be thrown out by the frost.

It is best to set the black and the purple varieties 6 to 8 inches deep but to cover at first with only 2 or 3 inches of soil. More soil can be added as soon as the canes appear above ground. Black raspberry plants are set 2½ to 3 feet apart in the rows. The space between rows depends somewhat upon the variety and soil but 7 to 8 feet are usual distances.

Red raspberry plants require about the same space except a few of the half-dwarf sorts. The space between plants in the rows does not matter greatly as the young suckers will fill the spaces after the first year. If, however, the plants are given less space the first crop will be larger than would otherwise be the case.

Culture

Usually black varieties are given no pruning or training the first season. If the growth is normal some of the canes may attain several feet in length. The first spring after planting the canes of the previous season's growth are cut back to within 12 to 18 inches of the main stem, because it is better to sacrifice somewhat in quantity of fruit for the sake of increased growth of plants. Aside from this cutting back there is no pruning to be done the first season after planting except to nip off the ends of the shoots when they have reached about 18 or 20 inches in height. This checks the upward growth and causes a thickening of the stems, making them more sturdy and self-supporting. Side shoots need not be cut back. The season following the new canes are nipped off in the same manner. This is all the summer pruning that need be done at any time. Some prefer, however, to cut and remove the old canes as soon as they have borne their crop of fruit. Others choose to remove the old canes when the spring pruning is done.

The regular spring pruning consists in removing a portion of the previous season's growth. Usually the canes are cut off to within 18 to 24 inches of the main stem, but much depends upon the vigor of the plants and the number of shoots, or fruiting stems. The object in removing a portion of the fruiting wood is to reduce the number of berries, thus increasing the size of those which remain. The tax upon the bushes is somewhat lessened also.

Some growers use no supports for raspberry canes, depending altogether upon the nipping off of the ends of the young canes to make self-supporting plants. Others set stakes and stretch wires along the rows to which the canes are tied, or in some cases simply allow the young shoots to lop over the wires. Staking and fastening the canes to wires prevents much loss of fruit by getting down into the dirt or by the rain splashing the soil over the berries. It also allows more complete cultivation than can be done if the bushes are not staked. In most cases staking is a profitable operation in black-raspberry culture.

If straw or leaves are easily obtained

black raspberry plants can be mulched profitably. In a small way this is a satisfactory method not only because of crop increase by mulching but also for the reason that the soil is greatly improved. The plan is particularly advisable upon dry knolls or upon any soils easily affected by drought. Mulching red raspberry and blackberry plants is less practicable than in the case of black raspberries.

Red raspberry plants are usually grown in hedge rows and tied to wires stretched along the rows. If the plants are grown in hills a stake is set to each hill and the rows cultivated both ways. In this case no wires are used.

The pruning of red raspberry plants is the same as in the case of blackcap so far as the removal of old canes is concerned, but summer pinching, or nipping, of the ends of the canes is not usually practiced.

In the spring the canes of the previous season's growth are cut back about a foot, except with half-dwarf sorts, which are not shortened.

Red raspberry suckers which are found outside the prescribed limits are to be treated as weeds. It is usual to leave the hedge row 8 to 10 inches wide and to destroy with cultivator and hoe all the plants beyond that distance.

Blackberries—Planting

Blackberry plants are given a little more distance between rows than red raspberries but the treatment is the same. On dry soils fall planting is advisable for blackberry plants but early spring planting is satisfactory also. Before planting the canes should be cut off about a foot from the ground.

Blackberry and red raspberry plants may be propagated by taking pieces of roots and burying them 2 or 3 inches in the ground. They throw up sprouts, which in one season make plants large enough to set in the field. The ordinary method, however, is to dig the sprouts with roots attached. If care is used in digging these sprouts make good plants if taken when 1 year old. It is possible also to remove them to the field in June of the same season when they appear above the ground. In favorable weather these young shoots are easily transplanted.

Culture

Good cultivation must also be practiced for raspberries and blackberries. It is true that many plantations are neglected by allowing weeds and grass to rob the plants of both food and moisture but satisfactory results are not secured when such neglect is allowed. Under these conditions a plantation lasts only 2 or 3 years. With good care it might last much longer, although usually blackcap raspberry fields are not kept longer than 4 years.

Ordinary weeds are not hard to subdue and frequent cultivation will hold the sprouts in subjection; but in a black-raspberry plantation especially, grass is very troublesome and must be taken in time. The first working of the soil in the spring may be done with a disk harrow and subsequently a common harrow-cultivator will answer. Teeth to cut sprouts are easily attached to a one-horse cultivator.

Since cover crops are not conveniently grown among raspberry or blackberry plants and manure is difficult to secure, it is not well to keep a plantation too long, but good care will be well repaid during its period of usefulness.

On thin soil 100 pounds of nitrate of soda and 200 pounds of acid phosphate would probably increase growth and yield, especially after the second or third year.

Varieties

Of blackcap raspberries the best varieties are Cumberland, Kansas, Gregg and Farmer.

The best red raspberries are Cuthbert, King, Herbert and Ranere.

Desirable varieties of purple raspberries are Cardinal, Columbian and Royal Purple.

Good varieties of blackberries are El Dorado, Snyder, Early Harvest and Early King.

CLEAN UP ORCHARD NOW

Trash lying under the orchard trees, and mummied apples left on the boughs, prepare the way for lots of trouble next season. The mummied apples are conducive to the spread of brown-rot; the prunings and weeds left on the ground harbor plant diseases that will live over the winter thus protected. This produces what is called "soil-sickness." Burn all weeds and prunings now, and bury or burn all other harmful matter.

Increasing Orchard Efficiency

By E. H. Favor, Illinois

WITH the shortage of labor that exists on the farm, the high prices that must be paid for that which is available, and the heavy demands that will be made upon all labor this season, it is highly apparent that the more efficiently all labor is used, the more can be accomplished. In my own work, I have found it very helpful to have a schedule, and to operate just as nearly in accordance with that schedule as is possible.

No one can make out a program that will apply exactly to the work of anyone else, as the work of each individual is necessarily very different. But now, while the weather is still cold and stormy, is a mighty fine time to make out a program for doing the work of the coming summer, and I am going to set down just a few suggestions about how a fruit grower can roughly outline a working plan.

Getting Ready for Work

First, the big jobs. These will be pruning, spraying, cultivating, making packages, intercropping, getting ready for market. Each operation should be carefully thought out right now, and every possible arrangement made for doing the work most expeditiously, if it is deemed advisable to do it at all. Take pruning as an example. Should the orchard be pruned this year, in view of the labor situation, and other circumstances? Each grower will have to answer that for himself.

Undoubtedly it would be a good plan to do some pruning, but if labor is scarce and the orchard has been well-pruned in former years, perhaps it may be dispensed with altogether. In either event, a little fore-thought and careful examination of the trees now will make it possible to do the work more economically. If pruning must be done, get all of the pruning equipment ready now. Get plenty of sharp saws, and have them just as good as can be bought. Get plenty of good pruning shears, and see to it that the cutting blades have a razor-like edge, and that none of them are sprung. Give the springs a good oiling. See that the pole pruners are sharp and well oiled. It is a waste of time to attempt doing a big, hard job with dull, bent or broken tools.

Have Spray and Pump Ready

Next comes the matter of spraying. This cannot be dispensed with. Spraying must be done, so the first thing here is to place the order for all of the spraying material that will be needed during the season. Orders for these materials should be placed now, so as to be sure to have them at the time they are needed, as railway transportation facilities are crowded to the limit, and there is certain to be some delay. In case you have never sprayed before and do not know just how much material you will need, write to the manufacturers of spray pumps or materials. Any one, or all, should be able to help you figure out just how much of each kind of material you will need.

Then see to it that the spraying equipment is in good shape. Give the pump a good test, by filling the tank with a little water and running it at full pressure for ten or fifteen minutes. Then be sure to drain every bit of water out of the pump and tank as soon as you are done, so as to prevent any possibility of breakage from freezing. This test will show up any defects that may need attention before spraying is to begin.

Get the order placed now for whatever may be needed, no matter how big or little it may be. Remember that the railroads are taxed to the limit now, and by putting off your order until the last minute you may not be able to get what you want until way past the time you need it. Be very sure that your spraying apparatus is in absolutely perfect condition, that your hose is in first class shape, that your materials are all on hand and everything ready for this big and important job.

To Cultivate or Not?

Then give consideration to the matter of cultivating the orchard. Should the orchard be cultivated? This operation may have been passed up last year, but should it be done this year? While there are many advantages in the cultivation of an orchard, this is one job that may be omitted if it is at all apparent that the necessary labor can not be had. On the other hand, where the orchard is young and may be intercropped, the necessary seed should be obtained now.

If corn is to be the crop, don't waste another day in getting your seed. When much soft corn was harvested last year, seed corn is very likely to be high in price and heavily in demand about planting time. The forehanded man will be the one who will be most certain to have a crop next year.

Remember the Packages

Then comes the matter of packing. February is none too early to begin thinking about packages, in case they have already been looked after. Remember the rush of last summer, the scarcity of crates, baskets and barrels, the delays in getting shipments through and the high prices had to be paid. Order your packages and get the material on hand just as you can. Then make it up on days. There will be enough rainy days between the time your package arrives and the time you will need it to make up enough to start the pack. And by ordering now, you will get a slightly lower price to pay good line.

When all these things have been over, and orders placed for the various items that are certain to be needed, make out a schedule, setting down approximate dates when each should be done. You know that the pruning will all be completed before spraying arrives. You know the approximate date for the various sprays, the time for putting the intercrops, and about when various cultivations should be made, getting these marked down on a calendar now, your work can be put in such a shape that it can be done with the least loss.

A carefully laid plan, lived up to, not only simplifies the work but lessens expense.

WATCH THE APPLE LEAVES

Did you ever notice how early the leaves of some orchards fall to the ground? Orchards in the same community may have their leaves even until freezing weather comes in the late fall. Since the leaves are really the manufacturing part of the tree, the longer they are kept at work the greater the wood growth in the orchard, and the greater the probable production of fruit. At least, this is the theory. How does it work out in practice?

In Bulletin 153 from the Pennsylvania Experiment Station, under the authorship of Professor J. P. Stewart, we find that practice supports the theory. Professor Stewart shows a very striking photograph illustrating the difference in leaf-holding power between fertilized and unfertilized rows of bearing trees. He estimates there is an increase of four weeks in the actual working season of the leaves of fertilized trees. The fertilized trees yield 762 bushels per acre as against 450 of but 25 bushels per acre where no fertilizer was used. It seems as though early shedding of the leaves is a good indicator of whether or not fertilizer is needed by a particular tree.

Nitrogen Most Effective

Nitrogen is shown to be the most effective of the three plant-food elements, phosphoric acid second. Potash occasionally shows rather remarkable results but nowhere nearly as universally as the other two. The bulk of the apple crop is always grown on new wood, therefore to get this crop we must apply the plant-elements which produce luxuriant growth, balancing the fertilizer in such a way that new growth will be sound and healthful, and resistant to winter-kill.

Professor Stewart also makes the following statement:

"In general, therefore, if the trees are fairly mature, reasonably sound and healthy, and yet are bearing only occasional crops of indifferent fruit; and if the age in late summer or early fall is pale and sparse, and the annual twig-growth is only two or three inches at the most, one can be reasonably sure that fertilization is definitely needed, and that its application will make a decided improvement."

This is a very fair statement of the case. If your territory includes orchard sections you will be interested in this bulletin, which can be secured free of charge by writing to the Pennsylvania Experiment Station, College P. O., Pa.

Problems in Pruning Young Apple Trees

By Roy E. Marshall, Virginia

INCE it is necessary to limit a discussion of pruning to certain phases of the subject, I have chosen to point out some of the common faults and weaknesses in pruning as now practiced in many young apple orchards, and to offer a solution of some of these problems. These practices are common throughout several states and I feel that repeated attention should be called to them.

Training the Young Tree

The so-called "tripod" or "three-prong" stem of training apple trees, which has been practiced extensively in many parts of the county, is deserving of first consideration. The idea seemed to be to select three branches emerging from near the same place on the trunk in the form of a tripod, that is, extending outward and upward in three directions. The leader was removed. These three branches were then cut back so that they were of equal length. The following year, two laterals were encouraged to develop from each of the original three scaffold branches. These new branches were in turn cut back equally. The following season two laterals developed from each branch of the previous year and were cut back again, giving the appearance of a "Dutch haircut." This system naturally results in an open center tree, theoretically of the ideal type—a tree in which it is easy to maintain balance after it is once established, and to almost all parts of which the sun can penetrate. Supposing one of the three scaffold branches breaks or splits off at the trunk after years. What remains of the tree? How are you going to replace that portion



Fig. 1—A weak, open-center type of training. If one of the three main branches had been left a few inches longer than the other two, and all three cut back so as to induce rebranching nearer the trunk, a strong tree might have been developed.

the tree? I am not speaking of something improbable, as many of the trees trained in accordance with this system are several years old and I have observed a few trees in which one of these scaffold branches has failed to stand up under the strain of a load of fruit, a windstorm, or heavy sleet and snow. It is quite evident that some system involving artificial support must be resorted to in these trees. It is readily seen that more scaffold branches must emerge from the main trunk so that if one is lost at some later date, the balance of the tree is not entirely ruined—that laterals may be encouraged to develop from those parts of the remaining tree adjacent to the space left vacant, to fill this space, partially at least. Those who have closely observed the effects of pruning are usually impressed with the fact that branches emerging from a common place are bound to form weak crotches. Even two branches of equal size, arising from another branch in such a way as to form a "Y," form a weak crotch which is liable to split. This may be prevented by encouraging one of the two to become a leader and suppressing the other, causing it to become eventually

a lateral. If we apply this principle in building the tree from the beginning and encourage the formation of several scaffold branches instead of three, we will have much stronger trees.

In order that a strong tree may be developed, it is essential that we have a cen-

ter, and it is usually possible to fill any space left by breakage, should such occur.

Consider the building of such a tree from the start, supposing that our tree comes from the nursery as a one-year-whip, has been headed, and has produced its first year's growth. The uppermost bud usu-

ally branches comparatively close to the main trunk, and will also develop a stocky tree.

The following winter the leader is treated in much the same manner as just described for the year previous. The scaffold branches will probably have produced several laterals. Two or three of these should be selected and headed back enough to avoid legginess. It is especially important that care be exercised to prevent the formation of weak and "Y" shaped crotches. They may be easily avoided by destroying balance in pruning—that is, where two branches exist, one should be left a few inches longer than the other.

The system should be continued throughout a third and possibly a fourth year. Then the leader should be suppressed or discontinued, that is, it should be removed just above the top scaffold branch, and the tree trained from this time as an open center one. Following this system of training, we should have a tree with a central axis or leader about sixty inches in length, with from seven to twelve scaffold branches extending outward and upward in all directions and spaced along the main axis for about thirty-six to forty inches, rather than all coming out from the same point, or approximately so.

I know of orchards ten years old which have been trained in this manner, in fact many growers have unconsciously followed this plan for years with individual trees. Some of these trees have been in bearing for some time and the advantages of this type of training seems to be well established.

It is usually possible to develop a whip into the type of tree desired, but it is indeed very seldom that the type of training can be changed after a tree has once been



Fig. 3—Three-year-old trees before and after pruning. Excellent examples of the modified leader type of training. Note that the leader is left a few inches longer than the lateral scaffold branches.—(Oregon Experiment Station Bulletin 139.)

tral axis upon which the scaffold branches are to be distributed. It is not possible to secure several scaffold from one season's growth of the main axis and have them distributed as we like, so we must take some three or four years and start two or three scaffold branches each year. After we have obtained all the scaffold branches that will be needed, the tree should be opened, in a

ally produces a branch almost upright in habit of growth. Probably four or five other branches develop. If so, we shall select about three of them, in addition to the uppermost one, well distributed about the trunk, and remove the others. In cutting or heading back these branches, it should be borne in mind that the largest branch of a group is given the advantage



Fig. 5—A nine-year-old Winesap tree. Note the long, rangy branches which are unable to carry the load of fruit. These branches should have been cut back rather heavily the first few years to have developed a strong, stocky framework.

manner similar to that advocated for the strictly open center tree. To accomplish this, the leader is usually removed just above the uppermost scaffold branch. The tree we now have is essentially what is known as the modified leader or modified open center tree, whichever you choose to call it. It presents practically all the advantages of the open center tree, is strong-

and will make correspondingly more growth the following season. Since we are desirous of developing the uppermost branch into a leader for a short time, we must leave it a little longer than the scaffold branches. In vigorous growing trees, it is often advisable to remove as much as fifty per cent of the leader and sixty per cent of the laterals. This will result in

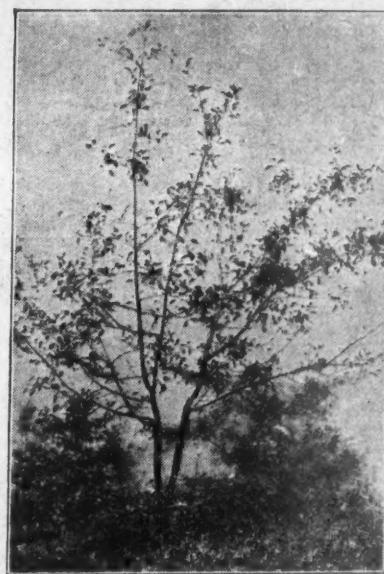


Fig. 2—A very weak crotch, which could have been avoided by cutting one of the two branches back some six or eight inches shorter than the other, and encouraging other scaffold branches to develop nearer the head of the tree.

started. I do not care to go on record as saying that I am opposed to the open center tree, provided the branches are well spaced and there are at least five. However, to get this we are approaching the modified leader type.

Necessity of Heading Back

I have been especially impressed with the way in which growers have allowed their trees to develop long, straggly or leggy branches. This is especially so in the case of such varieties as Winesap, Stayman, Mammoth Black Twig and Delicious. These varieties are strong growers; often producing a growth of several feet in one year when young. If they are not headed or cut back the terminal bud will continue to elongate the growth the following season and a few short laterals will develop near the end of the previous season's growth. Fruit spurs will also usually be formed along the previous season's growth. The point I wish to make is, that these branches are not in a position to hold up under the strain of a load of fruit. Anyone realizes how much more difficult it is to hold up a weight on the end of a five-foot pole than it is to hold up the same weight on the end of a two-foot pole. The same

principle should be borne in mind when pruning.

When pruning a young tree, the purpose should be to build a strong framework which is just as essential as constructing a strong and rigid frame for a building. The growth should be cut back rather severely during the first years to encourage the development of good, vigorous side branches not great distances apart, and to encourage the scaffold branches to become stocky. Cutting back has a tendency to cause them to thicken and thus become stronger.

The objection usually offered to this treatment is that too many branches are developed near the end of the branch headed back the previous season. It is a simple matter to remove those branches not needed, selected two or three to remain,

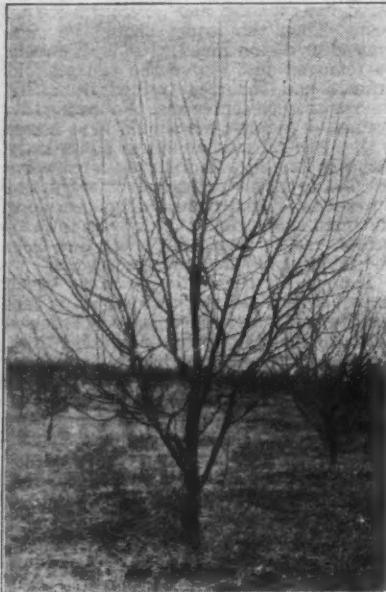


Fig. 4—A leader type of tree, which may be made a modified leader type, by removing the leader at the point indicated.

which are advantageously placed. I should consider it an advantage to have several branches from which to make selections for the permanent tree.

Preserve the Fruiting Wood

There appears to be a strong tendency among pruners to remove all the fruit spurs and short shoots from the young trees, especially from the scaffold branches. It has been proven beyond doubt that these spurs are productive of the first fruit of the tree. We are continually confronted with the question, "Why don't our trees come into bearing sooner?" The trees cannot be expected to fruit when the fruiting wood has been removed. When this is pointed out to most growers, they fully realize their mistakes. Some others have thought that these small twigs would only be in the way in later years, while still others have thought that they would continue growth and cause the inner part of the tree to become so brushy that it would be impossible to climb into it. These fruiting branches seldom become more than a few inches in length, and if they do, they may be shortened or suppressed. It is true that some of them will be broken off from time to time, but even if they are, it will certainly pay well to leave a liberal supply of them and preserve them as long as possible.

Suppose we have a tree, some four or five years of age, in which this fruiting wood has been removed from year to year. How may it be replaced? There are usually new branches, sometimes water sprouts, developing in the inner parts of the young tree every year, and these, advantageously placed, may be cut back from two to four inches, preferably in summer and in the course of three or four years will develop into fruiting wood. I wish it were possible for me to show you what has been done along this line in several orchards. The trees had been stripped of these fruit spurs when young, but now, with three and four season's work, they have a nice lot of fruiting wood which is actually fruiting throughout the trees.

Too many pruners fail to picture the tree they are pruning as it should appear in future years. When a tree is young, it is hard to realize that two branches crossing each other near the body of the tree, with

some five or six inches between them, will eventually become large enough to grow together or crowd, and possibly cause one or the other to split off. The same applies to two branches starting out parallel to each other, but later diverging. Another very common matter is a case of two branches paralleling each other for some distance, and some eighteen inches apart. Certainly one of the branches could be made to develop laterals and thus fill the entire space occupied by the two branches. In order to best accomplish this, one of the branches should be removed when young and this is where the pruner should exercise a little judgment, visualizing the future of each branch and leaving the one best fitted to develop that portion of the tree. It may not always be best to remove a branch which it appears will develop or grow into another branch at some later time, because it may be that a short branch can be used to advantage to fill some space and after it has made sufficient growth it may be suppressed or shortened to the desired length.

KANSAS MODEL ORCHARDS

Forty Kansas farmers will plant model orchards this year. E. C. Kelly, entomologist, and Harold Simonds, horticulturist, of the division of extension, Kansas State Agricultural College, will join the county agricultural agents in giving suggestions and assistance to these farmers. These forty men will follow the advice given and will attend demonstration meetings. It will be instructive to note the result.

A BACK-YARD APIARY

E. W. Mendenhall, Ohio

Here is a picture of my back yard apiary in the city of Columbus, O. It has produced for me during the past season over 350 pounds of honey, most of which is white-clover honey and very fine in quality.

I have no trouble selling it right at the door for a good price, but find considerable trouble in supplying the demand.

I have, as you see in the picture, only four stands of bees. These are the Italian strain, which are not very cross, but rather



E. W. Mendenhall's City Apiary

easy to handle after they once get acquainted. They do not annoy anyone, and are the kind I would suggest on a city lot where neighbors are close to you.

Honey a Luxury

They are very interesting little insects as well as very profitable. I consider this a nice side line, as sweets are scarce just now and honey is a great help and a real luxury. More people should keep bees, for they are less labor and expense than anything I know for value received.

The government has literature on this subject and is ready to help anyone interested in bees. With careful reading, one can soon learn to handle bees and become friends with these wonderful little insects.

"I guess I done my part in the war," boasted plump little Bobby, rubbing a somewhat distended tummy. "How so?" asked his teacher. "Well, you see, I read the signs that says 'Food will win the war,' so I jus' made up my mind to eat all the food I could, an' I done it too."

Winter Birds in the Orchard

By Eugene R. Davis, Illinois

THESE is a phase of the fruit growing industry which has been given a place of minor importance and that phase is the part which is played by the birds in the destruction of pests which interfere with maximum fruit production. Let us consider the part that is played by birds in destroying the natural enemies of fruit and fruit trees.

But first let us find the reason for the vast number of injurious insects and orchard pests. When Nature placed destructive insects in this universe to feed upon fruit and fruit trees it also put a natural check upon them. This natural check was the birds which feed upon these insects. Man, by various means, has destroyed large numbers of these birds and, as a consequence, it is necessary for him to fight orchard pests by artificial means. But the opportunity is not yet gone. By thoughtful methods, much can yet be done both by aiding the birds to increase their numbers and in utilizing their natural functions to the maximum degree.

Why Protect Birds?

There are several reasons why we should provide food and shelter for the birds during the winter months. First, it will save the lives of many and thereby increase their numbers; second, it will attract birds to our orchards, where, except in the most bitter weather, they will be of untold value in destroying obnoxious pests which are to be found in the bark of the trees; and third, the birds will remain in the orchard the next summer and be of much value then also.

Some information as to the value of birds in the winter orchard might be of interest. Among insectivorous winter birds, none is more valuable than the chickadee or black-capped titmouse. It is busy all winter long, gleaning the bark in the woods, in the orchards and in the evergreen hedges. The larvae of the codling moth or apple worm, the little grubs of the fruit-bark beetles or shot-hole borer, and more notably the eggs of plant lice, tent caterpillars, fall cankerworms, and like insects remaining on the bark all winter, are found and devoured by it. More than 450 of the black eggs laid by plant lice are known to have been eaten by a single bird in one day.

Assuming that one chickadee eats on an average 25 eggs per day, an estimate far below the actual number, over 3,000 eggs will have been consumed during the months of December, January, February and March. Each one of these eggs represents the future form of plant louse known as the "stem mother," which, no mishaps occurring to cut short the natural life of any of her descendants, would, according to Huxley, produce in ten generations a mass of organic matter equivalent to the bulk of 500,000,000 human beings.

The apple-plant louse has normally about eight generations in one season, the greater proportion of the individuals failing for various reasons to reproduce; but enough has been said to prove that the chickadee is the bird that eats the egg, that hatches the louse, that breeds the plague that knocks the orchardist out. It has also been said by a reliable investigator that "no bird compares with it in destroying the female cankerworm moths and their eggs." He estimates that one bird destroys 5,500 cankerworm eggs in one day, and will, therefore, consume 138,750 eggs during the 25 days it takes the cankerworm moths to crawl up the trees.

Other Insect Eaters

The tufted titmouse or crested titmouse, belonging to the same family of birds as the preceding species, is likewise a winter resident and, while more partial to berries, nuts and seeds than the chickadee, is also a valuable forager in the orchard. The white-breasted nuthatch, and the little brown creeper, have similar habits, though not so much is known regarding their exact value. The creeper is noted as one of the most conscientious, thoroughgoing, systematic insect hunters that lives.

Other birds which are valuable to the fruit grower are: the golden-crowned kinglet, the carolina wren, the bluebird, all the woodpeckers, hawks and owls, except the great horned owl. The two latter species are valuable in that they destroy obnoxious rodents and similar

vermin. It is also likely true that sharp-shinned hawk, cooper's hawk and American goshawk are not beneficial because they destroy many valuable birds. Some other birds whose presence in the orchard should be considered detrimental are, the great northern shrike, butcher bird, the pheasant or grouse, and the english sparrow. The butcher bird destroys many useful birds and the last two secure their food by eating off buds.

Methods of Attraction

The best method of securing the services of birds during the entire year is by attracting them to the orchard during winter. This can be done by providing them with food and protection during most bitter weather, and by destroying their enemies, whether animals or insects. All animals or birds which upon useful birds should be killed at all times. Food can be provided by hanging balls or scraps of meat from the lime trees and also by providing food shelves where grain and other food is placed for the birds.

During warm spells the birds get their own food from the trees, and during the coldest and most bitter days will eat of the food provided for them. Birds will come to and remain near orchards where food is provided for them on a stormy day. Another method of attracting birds is by providing shelter. This is more difficult problem owing to the fact that they most desire a natural shelter, preferably a cedar hedge, or clump of evergreens. These can be grown, however, in a few years' time. Birds will come considerable distance to an open orchard where food is provided for them, and they do come they never go away without paying for their food by destroying injurious insects, or their eggs or larvae. Any scraps of meat suspended from a tree will unfailingly attract chickadees, titmice, and woodpeckers.

Birds Reclaim Orchard

The following account of results in a Massachusetts orchard, given by Mr. E. Forbush, is worthy of thoughtful attention. An old neglected orchard, overrun with weeds and insects, and made profitless because of their depredations, was chosen for the experiment. It was near a small town of woodland, consisting of pines with few wild fruit-bearing trees and shrubs intermixed. During the three years preceding the one in which the experiment was made, the orchard had been pruned, and had been waged against the cankerworms and tent caterpillars, but no attention was given it. As a result of this treatment, the orchard had again commenced to bear grudgingly.

No measures of any sort were taken for the fourth year, and in the fall myriads of cankerworm moths were seen ascending the trees and depositing their eggs. The eggs of the tent-caterpillar moth were observed to have been laid in abundance. However, during the winter, baits of meat and suet were tied among the branches, and soon the chickadees, titmice, brown creepers and woodpeckers made this orchard their headquarters. The chickadees became so tame that they would alight upon the person who conducted the experiment, and take food from his hand.

An examination, made of the stomachs of some of these birds, proved that, besides the food supplied them, they吞下了 all forms of insect life to be found in the orchard and neighboring woods, following summer chickadees and woodpeckers nested in the vicinity of the orchard, while it and one other were the only orchards in the locality to have a crop of fruit that season, all others being too badly overrun with cankerworms and tent caterpillars. If feeding of birds were more generally practiced, it might soon become sufficiently abundant to supply all the orchards. Remember that all benefits received from birds are practically free.

Growers who ship to distant markets should consult the Daily Market Bulletin, issued by the Bureau of Markets, United States Department of Agriculture, Washington, D. C.

How He Made a Success of Fruit

By Paul C. Stark, Associate Editor

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ANY a man who has the foresight to see the future of a proposition, and who acts in advance of his neighbors, is regarded as a dreamer. At the beginning of an enterprise, all degrees of failure are generally predicted. But when success is assured, the knocker changes his tune, he gets into the band wagon and says that he thought all the time that it would be a success.

Six years ago, when Elva C. Barrows put in an orchard of 70 acres, three miles from Tulsa, Okla., the old-timers prophesied all manner of failures. He was told

As fruit growing was a hobby with him, and as he had made a scientific study of it, he decided that no more desirable piece of fruit land had met his vision in many a day. Some time later, when an opportunity was presented to acquire title to this particular "eighty," he bought it. Just as soon as the crops then on the land were harvested, he set about preparing the land for an orchard, and of the 80 acres, 70 are planted to fruit trees and bushes.

Planting the Orchard

First every stump was blown out with dynamite and hauled away. Then the land was plowed. He next visited the best fruit orchards in several nearby states, as he expressed it, "to check up his observations as to varieties." He then ordered his trees, and with him it was not a question of how cheap he could buy them, but where he could get just what he wanted.

Upon arrival the trees were immediately taken from the boxes and heeled-in, the orchard was marked off as accurately as a surveyor could do it, holes dug for the trees, vines, and bushes, and the planting done. For two years cotton was grown between the rows and this helped pay for the care of the young trees.

At the end of each year, new growth was pruned back in order to shape the tree properly and to get a body and framework that would carry a crop when the trees reached the bearing age. This orchard was probably the first one in that vicinity to receive scientific care; and at the end of the first year, when about half of the new growth of the peach trees was removed, every calamity known was predicted. Some said the trees were absolutely ruined, while others could not understand why a man should cut off new growth. "Why not let it all grow and make a tree that would hold a large crop?" Mr. Barrows only smiled, and kept right on with his pruning.

Today the orchard is regarded as one of the finest in the state of Oklahoma, and the place is visited by hundreds of people each year and is admired by every visitor.

Marketing the Crop

When marketing time arrived, only high-grade fruit was offered, and it was packed in crates and baskets bearing the orchard name and trademark. There were not many culs, but they were sold to hucksters and were not allowed to leave the farm in packages bearing the owner's name. A reputation for good fruit was built up and maintained. Hardly one-third the production was hauled to market—the market came to the farm and hauled it away in their own automobiles. Mr. Barrows said that often in one day from twenty to fifty automobiles came after fruit.

The orchard was carefully pruned, sprayed and cultivated each year, and where this work is kept up to the minute it is not near the cost and work one would imagine.

Having a market right at home for its

products the orchard was planned with a view to supplying such a market. In peaches, this orchard can supply fresh fruit from about June 5th to September 25th, and the same idea was carried out as far as possible with other fruits. This also relieves the labor situation, as there is little or no congestion.

A Good System

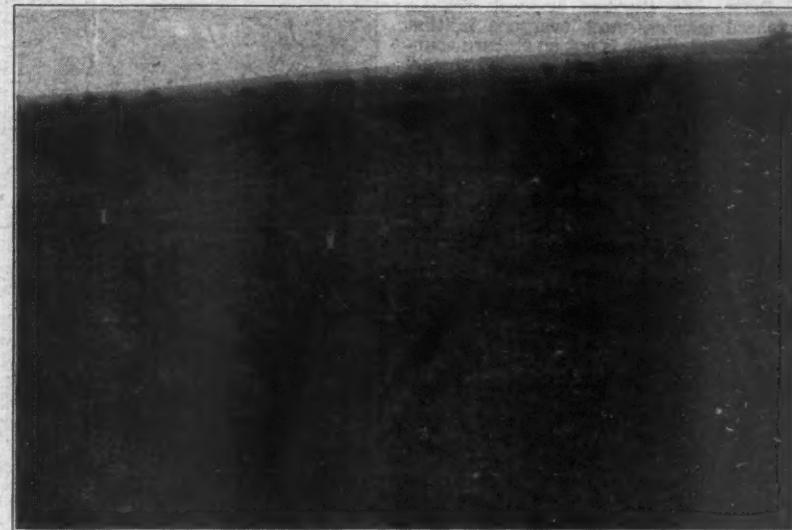
Everything pertaining to this orchard shows system. Every row of trees has at the end a white stake giving the number of the row. Blueprints show the exact location of each row, by number, giving the

proved attains enormous size and that in itself causes it to sell for fancy prices. Late Elberta and Krummel October both ripen so late in the season that they always bring fancy prices. Of the early varieties, Mayflower, which is the first to ripen, is profitable. It is immediately followed by Red Bird Cling, a masterpiece in fruit coloring, and its looks makes it sell for good prices.

Mr. Barrows recommends America, Gold, Late Goose, and Stella plums; Montmorency, Suda Hardy, and Early Richmond cherries; Moore Early, Campbell Early, Worden, and Concord grapes.

Successful Local Market

The success Mr. Barrows has made of his orchard illustrates more forcibly the result of business foresight. There are



A View of Mr. Barrows' Orchard Taken Several Years After Planting

number of trees of each variety. Each day during harvest a report is handed Mr. Barrows showing the day's sales, also showing the number of boxes, baskets and crates on hand.

With an eye to his future market, Mr. Barrows planted as follows: Peaches, 4,500 trees; plums, 1,200 trees; cherries, 500 trees; apples, 288 trees; crabapples, 216 trees; nectarines, 72 trees; grapes, 2,200 vines—red, white and black; blackberries, 2,000 plants; dewberries, 400 plants; red raspberries, 1,000 plants; black raspberries, 800 plants; gooseberries, 2,600 plants.

Asked as to which variety did the best in the orchard, Mr. Barrows said that they all did well, but a few did better than the others. Of the peaches the highest prices were realized from the very earliest and the very latest varieties. Of the standard canning varieties, Stark Early Elberta and J. H. Hale probably topped the market, with Elberta always in demand. Stark Early Elberta ripens a week before Elberta, and as it is about the first good canner, prices are good. Sea Eagle Im-

many towns in the new and growing west that ship in every bit of fruit they eat. Mr. Barrows' success could be duplicated in many places, not only in the west and southwest, but in hundreds of communities throughout the country. This is a clear example of the splendid opportunities for profit in local home market orchards. Furthermore, it must be remembered that any surplus that is not called for on the local market, can always be sold on the big city markets, who have been, and are still, paying higher prices for first-class fruit than has ever before been received. However, the experience of men like Mr. Barrows shows that the local consumers so greatly appreciate the opportunity to get fresh, home-grown fruit that the orchardist doesn't get a chance to ship any of his fruit crops.

Mr. Barrows has given to this orchard the same keen business application that he would to any other business venture. The orchard is not allowed to run itself. It is cared for very carefully, and scientific methods are always employed. His manager seems to take as much interest in the



One of the Cotton Crops Harvested from "Between Tree Rows" in the Orchard of Elva C. Barrows, of Tulsa, Okla.

orchard as he would if it were his own. The enthusiasm, push and team work on the part of owner and manager contribute to their full quota to the making of this orchard a success.

Example to Community

There is one other point that should not be overlooked. And that is the benefit of this orchard to the community. Something that cannot be computed in dollars and cents. It has been an object lesson in proper orcharding.

The people who have visited Mr. Barrows' orchard have observed his methods and noted the results secured, and, as a consequence, many a little back-yard orchard, as well as larger orchards in that community, are getting better care than formerly. Mr. Barrows says there is seldom a day when he is not stopped on the streets or called over the phone and asked something about the care of trees. Such information he always gives cheerfully.

Before Mr. Barrows demonstrated his orchard success, most everyone in that section said, "This is not an orchard country—fruit trees do not succeed here." One can hear those same predictions in many, many sections of the country, but generally all that those localities need is a man like Mr. Barrows to show them.

HOW I MADE MY OLD ORCHARD PAY

By J. R. Lucas, Missouri

Some years ago the trees in my old family orchard showed signs of losing their thrift and fruitfulness, had a poor color, and as I was not getting the fruit I should I started to rejuvenate them as I fully believed the stratum of hardpan I knew underlaid my soil was the base of their trouble by shutting off their food supply from the under subsoil, also causing imperfect drainage.

The first few shots I made were entirely incorrect as I found out after firing them as I placed too heavy a charge and too close to the trees which broke off and tore up too many of the large roots and I knew if properly handled rejuvenating would not tear up the tree-root system, so I kept enlarging my distance from the trees, finally placing the shots directly in the center of the rows between blocks of four trees. I am perfectly well assured now that my first few shots were wrong and harmful, with the latter ones satisfactory, as since, three of the trees I placed the explosive too close to have died while the balance have put on a good growth, and except for one year have borne well, so mention my experience with this work so that others contemplating any similar work will fare better from the start.

By drilling down with a steel bar I found the hardpan underlying my trees was about four feet below the surface so I drilled my shot holes about four and a half feet deep, or some six to eight inches into the stratum, when I loaded each with half cartridge of 20 per cent dynamite.

Cutting a number of cartridges in half I primed them with number six blasting caps, with a sufficient length of fuse each to reach several inches above the ground, and as soon as I had a number of holes drilled I placed one of these charges to a hole and tamped in tightly.

For the tamping I used a small broom handle (wood should always be used as an iron or steel bar might cause some spark), my soil being stony which might result in a premature explosion.

The first few inches over the shots I tamped solidly but very carefully on account of hitting the cap too hard, gradually increasing though until the latter portion I tamped in as tightly as possible as I wanted the force of the explosion to go down through the hardpan and not shoot up through the soil any more than possible.

In stony soil one thing to be careful of is, not to tamp in any more small rocks than possible as a couple of my shots failed to go. After leaving them several hours while I worked on other shots I dug down and found I had tamped some rocks tightly against the fuse cutting it below which the powder core had not burned, but by splitting the remaining fuse about an inch, lighting and hurrying away, they were both fired although the results were not as satisfactory.

As previously mentioned, several years have elapsed since doing this work so I can now say the shattering of this hardpan brought these trees back to health and profit.

The Big Little Spray Gun

By Benjamin Wallace, Douglas, Indiana

OME time ago in an article concerning the "War and the Fruit Grower" I mentioned the fact that the adoption of the spray gun in place of the old-fashioned extension rod, had resulted in a decided saving to the orchardist. Immediately after this article was printed I began to notice a marked increase in my daily mail. It seemed that fruit growers from Maine to Muncie, and from Florida to Frisco, had seen my note about the "gun" and they all wanted more information.

The whole business of spraying is so new that there is little wonder that we have



Reaching the Tops of the Trees

improvements in technique almost every year. A few years ago, when spraying first became an important orchard practice, the machines used were crude and the results indifferent, but with each succeeding year the machines and accessories have been improved and the results have been better. This in spite of the fact that insect and disease conditions have become worse in the unsprayed orchards.

I recall that the first "extension rods" consisted of a wooden pole to which the nozzle was attached. The pole enabled the operator to poke the nozzle and hose up into the branches and so to spray the tops of the trees. This method was effective. It was also deadly to the man poking the pole. Lugging a heavy weight like that around all day was not conducive to efficient work on the part of the sprayer,



The Spray Gun in Motion

and as a result many tops of trees were hurriedly sprayed—or not at all.

Later an iron pipe with the nozzle on the end was substituted for the wooden pole. This arrangement allowed the solution to pass through the iron pipe to the nozzle, and was much more convenient than the old method. The iron pipe was heavy, however, and it has a habit of rusting on the inside, and the rust clogged the nozzles. To make the pipe lighter, small-sized tubing was used, and an active man in the orchard would often whip off a section of pipe when he made a quick movement of the "rod."

A little later the bamboo extension rod

came into existence. This was simply a section of cane pole, drilled out and lined with a thin brass or aluminum tube, the hose attached at one end and the nozzle at the other. I remember the first rod of this sort I ever used, and it seemed at that time as though the ultimate perfection of spray rods had been attained. These rods were made in various lengths from six feet up to about sixteen feet. The short ones were easily handled but the long ones required a pretty husky individual to keep them in action for a day at a time. Even the middle-sized ones of about ten feet in length would give a man all the exercise he wanted before his ten hours were up.

Coming of Spray Guns

A year or two ago an additional improvement was brought out almost at the same time by a number of different companies, under the general name of "spray gun."

The spray gun is simply a very short brass spray rod fitted with a nozzle of special design. This nozzle is so built that it will throw a broad, cone-shaped spray, or a long-driving stream. The control is located at the butt of the rod and consists of a screw handle working on a long rod inside of the spray rod proper. This inside rod acts as a stop to the nozzle and also plays a prominent part in the action of the nozzle. As the screw handle is turned at the base of the rod, the nozzle opens quickly to form a beautiful cone of misty spray. This cone is very wide and covers much more space than does the spray cone from the average disc nozzle of the old type.

The spray gun, essentially as above described, was introduced two or three years ago, and such broad claims were made for it that I hesitated to try it. The advertisements were too rosy to appeal to my conservative pocketbook. As a result it was not until the draft had taken most of my spray hands that I was forced to try out the spray gun or allow large blocks of apple trees to go unsprayed.

Gun Quicker Than Rod

When we came to use the new implement in the orchard we found that we could spray more trees with less men and in less time than we had ever been able to spray with the old cane rods. In fact one man did about the same work that four had done in the past. At the end of the day this one man was not worn out as he would have been if he had been handling the long rod. He had also used less dope per tree.

At the end of the spraying season we found that we had saved time and material and the orchard appeared to be well sprayed. The saving in time and material had been so phenomenal, however, that we could hardly believe that the work was as good as it would have been under our old methods; to determine the effectiveness of this work we could only wait for the harvest.

American Fruit Grower

FRUIT-SELLING LETTERS

By H. E. Martin, Ohio

When salesmen are scarce and time precious, the business man writes sales letters than ever. So, today, with shortage of man power and an increased postage rate, better business letters are in order, and by them much business is and done.

The alert fruit grower has discovered the value of effective letters. And shouldn't he?

Last summer a fruit grower sent a bunch of letters like the following to selected prospective customers, and he received by mail and telephone all the orders he could handle:

SHADYSIDE FRUIT FARM
S—, Ohio
September 5, 1918

Dear Mrs. Franklin:

Wouldn't you like to eat some big Elberta peaches, fresh from the tree?

I will have a few bushels of this delicious fruit for my selected trade next week, by auto delivery I can bring them to door within five hours after they have picked.

Taken directly from the trees to home-grown, and hand-selected, peaches are better for both eating and canning than those on the markets. Price for the large size will be \$2.00 bushel.

They can be delivered Tuesday Thursday of next week. But I can promise to fill only the earliest orders; so kindly call me by phone—Jefferson 602—on the enclosed postal card.

Yours very truly,

If this fruit grower, and other food producers, win trade by letters, what are the essentials of an effective sales letter as the specimen?

First, it is personal in address and appeal and, therefore, interest arousing. Second, it explains a proposition, stimulating the prospective customer's taste for fresh, ripe fruit. Third, it convinces by presenting evidence of the freshness and quality of the fruit, in this case by means of indirect comparison. Fourth, it induces immediate action by a definite limited offer and by putting the means of ordering at once into the hands of the reader. Fifth, it attracts the eye because it is carefully written, with the contents divided into four paragraphs instead of one or two crowded ones, and with plenty of margins. Neatness, and alluring, but always truthful, explanation attract the homemakers.

It is clear, then, that the elements of a sales letter are an interest-awakening introduction, sufficient specific explanation and proof to make the reader see the appealing characteristics of the product for sale, sufficient persuasion to make the reader want the product in preference to any other, and a "clincher," an inducement which will secure an immediate order. The inducement may be a special price, a limited supply warning, or special conditions of payment, and always ready means of ordering, such as a printed postal card, addressed envelope or telephone number.

Besides using these essentials, the successful letter writer will use neatly printed stationery, and when he writes a letter he will forget the worn-out, hackneyed formal phrases and terms which filled ineffective letters of a decade ago. Prominence will, of course, be evident in answering all inquiries and in filling orders. When the writer mails his letters, he can be sure that they go to well-chosen addresses—those of good prospects, cured from old customers and friends, poor mailing list wastes many a stamp.

EMPLOYMENT FOR ONE-LEGGED MEN

"I held off a long time," says a Toronto man in Canada, "but when I saw so many men with one leg I positively began to be ashamed of having two."

They say you cannot scare a Canadian by bringing him face to face with men who have lost arms and legs in their country's service. These physically handicapped men are being trained for civilian employment, and are demonstrating every day in contact with their fellows, that physical handicaps do not mean industrial or occupational handicaps. The one-legged man simply goes into a two-legged employment and resigns the one-legged employment to a one-legged man. He thus continues to be 100 per cent efficient.

Co-operation Was Profitable in Kentucky

By N. R. Elliott, Kentucky

NFEBRUARY, 1916, some eight or ten farmers living in what is known as the Sourwood Section of Madison County, Kentucky, met in a schoolhouse the purpose of discussing ways and means whereby farming conditions in that section might be improved. The soil of the section is naturally poor, and under a system of farming that had been

men were instructed to bring all of their ripe melons to Waco, that being the village most centrally located to all growers. They brought them in loose in buggies and wagons. Instructions had been given

they were forced to seek other markets. Some of the melons were sent to Cincinnati, O., some to Louisville, while shipments to Lexington and some of the smaller towns in the neighborhood were combined. Wherever the melons were sold, they proved entirely satisfactory; they had an excellent flavor, were of a desirable size, and well netted—three qualities that go to make up a good cantaloupe for marketing purposes.

The shipping season lasted some seventeen or eighteen days, and a total of 720 crates were shipped the first season. Since there were not enough melons to make it possible to ship in carload lots, the melons had to be sent by express. Express rates were high, and as a result the men did not make as much as they should have on their melons. However, the fifteen men who started up the association were well pleased with the results, since they figured that they made \$65 an acre on land that up to that time could have been bought for \$30 an acre. The results had a wonderful effect upon the neighborhood—everybody wanted to get in the game and enthusiasm ran high. A meeting of all the farmers in that locality, who were interested in growing cantaloupes, was called.

More Growers Enter Association

In December, 1916, at this meeting, some 230 acres were subscribed by 96 growers, and the contract was let for 13,000 crates. Early in the spring of 1917 a meeting was held for the purpose of ordering seed. The growers were all convinced of the fact that it paid to get their seed from one company and order the best



Packing the Cantaloupes in the Field

practiced it was impossible to keep up fertility sufficient to produce good crops. Therefore, the agriculture of the section was in a bad condition. It was evident that what was needed was a good money crop that would bring in returns sufficient to enable them to keep up their land. Some of the men believed that strawberries would serve the purpose; others thought they should continue to give their time and attention to tobacco, while still others were undecided as to the best course to pursue.

Third, it was the opinion of the farmers in the section that in this particular case, the best course to pursue was to grow cantaloupes. The writer, who had seen some of the vegetables, and particularly melons, that had been grown in that section, met with these men and he suggested the idea of growing cantaloupes and marketing them in a western style, i. e., standard crates and boxes, holding forty-five and twelve melons respectively. At first the suggestion did not meet with approval. The meeting adjourned without any definite plans being made. However, it was the beginning of co-operation among those farmers that section. The very fact that they realized that something must be done for the community, was evidence in itself that they were willing to make an effort along any line that they thought would accomplish this.

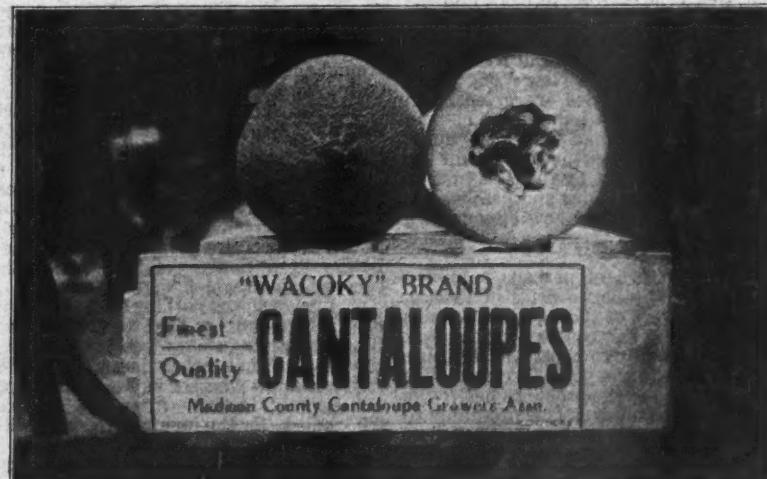
Suggestion of Melons Adopted

After these men had had time to think over the proposition of raising and marketing cantaloupes in a co-operative way, they held another meeting, invited in a few more men, and the writer was asked to come back and give them instructions on growing of these melons. The result of that meeting was that early in the spring of 1916 enough seed was ordered from Lakewood, Colo., to plant approximately forty-seven acres in cantaloupes. There were fifteen men in the association, who agreed to follow instructions and abide by the consequences. These men were given detailed instruction as to just how they should prepare their ground, plant the seed, and cultivate the crop. They also agreed to come at marketing time and show them how to crate and pack crates as well as secure a market for them.

May 10th was decided upon as the day when everyone should plant their seed. Of course, a few of the men did not get their seeds planted until ten days or two weeks after the date set. However, a large percentage of the twenty-seven acres were planted at that time. The season was comparatively favorable, and on the 19th of August the first melons were ready for market. In the meantime the men had made arrangements with the local lumber companies to cut crates, payment being guaranteed by signature of the men who were practically all land owners.

On the 20th day of August, 1916, the

previously as to how the melons should be packed in crates. There were some queer crates of melons on exhibit at Waco that morning. Some of the crates contained thirty melons, some thirty-two, and some thirty-five, the most being thirty-nine melons. The men were anxious to tell



This Label is Placed on the End of Each Crate

their instructor it was absolutely impossible to put forty-five melons in a standard crate. After the crates were open, the melons graded and one or two crates repacked, the men were convinced of the fact that it was all in knowing how. They had simply failed to place the melons in the crates all of them facing the same way. The natural result was that it was impossible for them to get forty-five melons in a crate. About ten crates were packed that morning. They were put on the noon train and sent to Lexington by express.

In the meantime the men had selected a name for their association. They had their labels printed, and the label was placed upon the end of each crate. The name given to the organization was the Madison County Cantaloupe Growers' Association.

Market Accepts Home-Grown Melons

When these melons arrived on the Lexington market, the Lexington people did not believe that they had been grown and packed in the state of Kentucky, but thought that they were western-grown melons with a Kentucky label placed upon the crates. After the commission man had convinced some of his dealers that they were "real, sure enough" home-grown melons, the association had no trouble in selling their product in the Lexington market. In the course of a week or ten days they were shipping from thirty to sixty crates a day. The result was that

seed possible. Enough seed was ordered from a well-known western seedman to plant the entire 230 acres.

The large increase in membership showed that suspicions and doubt had been removed from the minds of the small farmers who, during the summer of 1916, had seen fit to laugh at and criticize the

fifteen men who had stayed by the organization. The fifteen men were considerably wiser in the growing of cantaloupes than the new men. They had seen the value of saving their manure and composting as much as possible. In order to prepare for this, they had bought a fodder cutter, had their fodder cut, and many of the men were pleased to say that it was the first time in their lives they had made any real effort to save farm manure.

Success in Spite of Weather

In 1917, May 5th was decided upon as the planting day. It so happened that weather conditions were not favorable, and many of the growers did not plant on that day. Several of those who did plant got poor stands and had to replant two or three times. As a consequence many of the patches did not have an equal chance with some of those planted earlier. During the summer it was comparatively dry and this had a tendency to lessen the crop considerably. However, by the 20th of August they were ready to start shipping, and from the 20th of August to the 19th of September a grand total of nineteen refrigerator cars of cantaloupes were shipped.

These "lopes," for the most part, went on the market in first-class condition, some of them going to Cleveland, to Columbus, to Cincinnati, to Lexington, and to Pittsburgh. There seemed to be no trouble to sell the product, and this was due to the fact that the melons were thoroughly graded, well packed, and put up in clean, new crates with an attractive label.

The association was not incorporated, but the men agreed to stand back of their product, and the salesman did make that statement good. Whenever a car of melons did not come up to the standard, the association was willing to pay a reasonable rebate.

Association Growing Stronger

The growers figure that they made from \$85 to \$90 an acre on their melons this season. Such an income insures a large increase in the acreage to be planted next season.

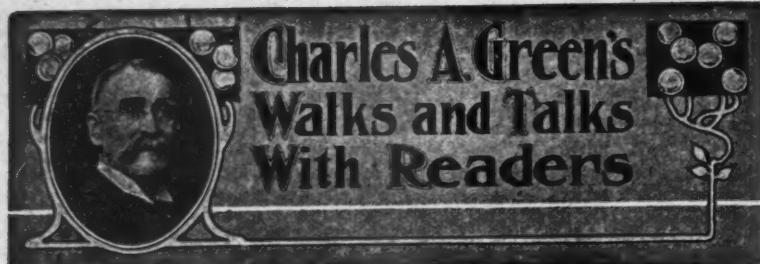
They are making preparations at the present time to incorporate the association, because it is getting so large that they will not be able to do business any other way.

The entire history of this organization goes to show that where men are willing to pool their interests, can produce a good product, and put it up in the most attractive way, it can be sold at a profit. One of the things that stands out prominently with this association, is the fact that it is the first time any cantaloupe had ever been shipped from the state of Kentucky in carload lots. Furthermore, by buying the same kind of seed, putting their product up in exactly the same way, and using a nice attractive label, they were able to compete with melons from Colorado, California, Wyoming, Maryland and Delaware.

EDITOR'S NOTE.—Fruit growers in many sections could form co-operative societies to their great advantage and profit. Act today, Mr. Fruit Grower, and get your neighbors to join you in organizing a Fruit Growers' Co-operative Buying and Selling Association.



Co-operative Shipping in Refrigerator Cars



How to Keep Apples

ONE REASON why the apple is called the king of fruits is that it is by nature a long keeper. Think of the perishable nature of the strawberry as compared with the apple.

Apples are apt to shrivel and deteriorate when exposed to the air.

I have no difficulty in keeping winter apples plump and in fine condition. My method is to wrap each apple in paper. Orange and lemon growers have learned the helpfulness of paper, therefore all oranges and lemons are wrapped in this material before shipment. Old newspapers can be used for this wrapping. Do not be stingy with the paper as the larger the sheet the more secure the apple.

After wrapping, pack the apples as closely as possible in a tight barrel or box and cover the top securely. Thus packed, if a few of the apples decay they will not endanger the others adjacent.

Another method, considered even better than the above, is to spread several sheets of paper at the bottom of the barrel large enough to more than cover the bottom of the barrel and to rise on the sides a little way, then place as closely as may be a layer of unwrapped apples upon the paper thus placed, then cover this layer with several sheets of newspaper and proceed in like manner until the barrel or box is filled. When thus packed each layer of apples will rest upon sheets of paper and will be protected on all sides with paper and on top. The more paper used the more secure the apples from shriveling or decay.

Another method of keeping apples all winter is to bury them in a pit much the same as potatoes or carrots are pitted in winter. The objection to this plan is that apples thus buried cannot be conveniently taken out during winter.

Under certain conditions not definitely known, apples that are frozen may come out in the spring in fine condition. If apples are subjected to frost and to thawing alternately they will soon be destroyed, but apples with one freezing, the fruit to be kept frozen and the frost allowed to come out gradually without disturbance or moving, may come safely through the winter.

Near the old homestead farm where I was born, was an orchard of seedling apples which fell upon the ground and were not gathered since the quality was so poor. When spring came we children often found that apples that had fallen upon the ground in the fall and were partially covered with leaves, grass or snow, were preserved in good condition and were eaten with delight in the spring.

My experience teaches that an apple may be bruised and yet not begin to decay from the bruised spot, provided the skin is not broken. The principal object in packing apples in paper as I have suggested above, is that they are thus kept free from light and air and in as cool a temperature as possible without freezing.

When wrapped in paper the apples will not freeze although the temperature in the storage house may decline several degrees below freezing. Paper is a better protection against frost than cloth. Paper is one of the best protections from frost.

Fruits Have Won the War

Well informed individuals announce the opinion that the canning houses have given us victory in the world-wide war. What is meant by this is that the great canning houses of the United States are the greatest in the world and the most successful and that these canned fruits, going into the trenches, hospitals, camps and huts, have done a great work in brightening the lives of our soldiers and making them contented under distressing circumstances.

Imagine the effect on a hungry boy in camp opening a can of strawberries, raspberries, blackberries, peaches, pears or plums. The sight of this tempting food reminds him of home and old associates.

The effect of this delightfully canned fruit, by processes so perfect that you can almost smell the berry field when you open the can, has done much to promote the healthfulness of our boys at the front risking their lives for the welfare of the world.

The United States government has made no mistake in placing fruits and the plants, vines and trees that produce fruits, on the preferred list as regards shipment and quick delivery.

Let's Look Ahead as Fruit Growers

The world has been elated by the prospect or certainty of world-wide peace. What will be the effect of peace on fruit growers?

During the four years of war, there has been a great demand for small fruits and also for the large fruits. In many instances the supply has not been equal to the demand. Prices in many instances have doubled. In some of the smaller fruits prices have more than doubled in many localities. Meanwhile less planting has been done during the four years of war. The result is obvious. High prices will prevail for all kinds of fruit in the near future at least, and probably for a long series of years.

Many people were deterred from planting owing to the scarcity of labor and the advance in price of labor. It was feared that help enough could not be secured to gather the fruit, but little fruit has gone to waste, even in western New York where fruit growing is carried on extensively. School children were induced to help in picking the berries, and the older youths of the cities, and even the teachers of the high schools, went out by the thousands to pick apples, pears, plums and peaches, indicating that no matter how discouraging the outlook, where there is a will there is a way.

With the return of perhaps a million soldiers from the battle fields of France, and the hundreds of thousands of soldiers held in camps in this country, we can look forward confidently to being able to secure plenty of help in the years to come. The fact is that one of the problems before the people of this country is how profitably to employ soldiers who are not, and have not for the past four years, been producers. Women who have taken the places of men will hold such places in many instances. It is a matter of record that the women of this country have helped to win the war. They have accomplished marvelous results and have surprised even themselves. They have not only gone onto the farms, and held the plow, and ridden the reapers and mowers, but they have entered the hospitals and the factories of the cities.

Prices of plants, vines and trees must of necessity be higher than in the past, as they have cost more. Further than this, nurserymen have not been receiving live and let live prices for their products, and thus many of the oldest and strongest nurseries of the country have gone out of business. The tug or strain on the nurseries will occur in the spring of 1921, when I prophesy that fruit trees will sell for a dollar each and still not yield large profit to the nurserymen, for at that time they will have a very short supply to offer their patrons.

Several Questions Answered

First—Mice and moles were very destructive around my place last winter and cut down shrubbery and one or two small trees by girdling them near the ground line. I have too many to bank them around with dirt or ashes and I am wondering if these is not something which can be painted on them or some other method of protecting them. What can you advise me in the matter?

Second—You have heard about the cherry blight which hit so many cherry trees last year. It hit some of mine. Has

it killed them? They lost all of their leaves early in the season. You probably have reports by now and will know what cherries were immune from it. Can you tell me which ones are surely immune?

Third—I have had difficulty in the past in keeping seed beans on account of a small beetle which eats holes in them and while it does not always unfit them for seeds, they have to be sorted pretty carefully for baking purposes. How can they be kept free from this small bean-eating bug?

Fourth—We have had much trouble this year with a small brown bug which has gotten into cereals and sweet things in our cupboards. They have bred more freely than it was possible to keep up with them and dishes are continually being covered with a small white worm which is evidently the grub of this insect, which seems to measure less than a quarter of an inch long. It is probably a grain bug of some kind for it has raised havoc with all cereals. We put a saucer of formaldehyde on every shelf in the cupboard and, while it was very strong, it made absolutely no impression on these bugs. They are just as thick in this cooler season as they were in the summer except that they are not breeding so rapidly. Everything in which they could get has been removed or put into glass cans with rubbers, but there must be some way of exterminating them. Do you know of any such method?

Fifth—Can you refer me to, or send me, a germination table of vegetable seeds showing just how long the various seeds will keep and still germinate? Have seen some such table as this but have not been able to find it for over two years.—A. B. F., N. Y.

Reply—In reply to your favor I will say that after forty years' experience with mice which are inclined to gnaw the bark of the trees, I find they can best be defeated by making a steep pile of earth around the base of each apple tree. It seems to be unnatural for the mice to ascend mounds of earth during winter. This is also a very cheap process. Another method is to bind around the base of the tree thin veneers of wood that can be bent around the trunk, covering the lower part entirely, being held in position by a wire or string. These can be left on or used year after year. Some use tared paper in place of thin wood. If the tared paper is left on during hot weather of summer it might do injury to the bark of the trees. I have never favored painting the trunks of trees with any material whatsoever as I have known entire orchards to be ruined by the application of paint or greases, the constituents of which were unknown.

2. I have heard nothing about blight in cherry trees further than that there is a fungus attacking cherry trees which causes the leaves to fall earlier than they should. I do not know whether any of the cherries are entirely immune from this trouble. The remedy for the fungus is to spray with bordeaux mixture in July or August.

3. I know of no remedy for this beetle.

4. We are also troubled with this brown bug in the cereals. Unopened packages are not disturbed, but if they are left exposed long these insects will gain entrance.

5. I cannot refer you definitely to a germination table. If you will write the Department of Agriculture, Washington, D. C., I think they will mail you a bulletin on this subject.

Grafting an Orchard

I have 150 to 200 apple trees nearly large enough to bear which I want to top graft or bud, and am undecided which is best. As you are an experienced fruit grower I wish you would kindly advise me which is best. I did not get it done this spring but if you think June budding will give me good results I will bud my trees in June. S. A. Smith, R. D. 1, Dante, Virginia.

Reply: Since you do not give full particulars I cannot reply fully. Grafting or budding is difficult to teach by letter. If the trees are as large, or larger, than usually sold in nurseries, grafting would be the best method, but it is too late to graft this season. I see you say the trees are large enough to bear fruit. In this case I advise you to employ a skillful grafting who has had experience. The novice or beginner could not expect to succeed with such grafting. Grafting requires the cutting away of many large limbs, but see that three or four large limbs are not disturbed as too much cutting away in one season is injurious. After the grafting it will be necessary to keep the sucker shoots from

American Fruit Grower

growing out of the branches grub. These should be rubbed off about season of the year as fast as they appear.

Taking the question all in all it is not an easy problem to top graft such trees yours and turn the orchard into other varieties. The date at which the graft is done is of the greatest importance this can only be decided by an experienced man on the spot.

I have never heard of June budding apple trees.

Land for Fruit Growing

Will you kindly tell me how to choose land to grow peaches and apples? We have not had a great deal of success with trees. Our peach trees just bear at three or four peaches a year. The peach lies on the north side of a hill and perhaps that is the reason. I would like to have a few acres of land and plant some orchard.

Mrs. J. M. Shepherd, Pennsylvania.

Reply: I would select an elevated or slope or hillside, not too steep, for kind of a fruit orchard, and would prefer valleys, and yet much good fruit is grown in valleys, but there is more danger from late spring frosts. Many prefer the north side of a hill for peach trees since the buds are retarded in opening too early in the spring. Much can be learned by conferring with neighboring fruit growers. Do not select the tenacious, sticky clay soil that bakes in the summer sun. Clayey loam, gravel soil, or sandy soil if it contains enough fertility to grow a good crop of good.

New Heads for Trees

The tops of several of the trees I set out in spring have been completely broken off by the exceedingly heavy snow and ice of past winter so that there are only about a foot of trunk standing. Is there anything I can do to save them? L. O. Powell, Maine.

Reply: All you have to do is to cut the top of the tree where the top is broken off, leaving the trunk as long or high as possible. You will find that during the coming summer strong shoots will send out on this bare trunk. You select such shoots as you deem fit for the formation of a new tree. Branches are likely to appear near the top of the trunk. If so, you can form a new head from these branches. You consider that the trees will be lower heads on account of the accident which occurred. If only one strong branch sent up near the ground you can allow it to shoot to make the new tree.

THE MINNESOTA No. 4 RASPBERRY

By G. H. Townsend, Minnesota.

The high price and insufficient supply of raspberries has caused considerable comment and inquiry as to the cause of the declining crops.

Briefly stated, the productive varieties do not yield enough to be profitable.

The Minnesota plant breeding station makes an energetic effort to produce varieties of value for the benefit of the state. It has no selfish interest in finding new things on the public but sends out plants to members of the State society stand on their own merits. A few years ago the station sent out a few of thousands of its best new raspberries. These have been widely tried and all been withdrawn except the No. 4. Its success has been such as to make who know of it eager to plant it as a commercial berry. The No. 4 is a cross between the Early King and the Column. Of all the hardy berries, the Early King is now recognized as the best commercial berry generally grown. The Columbian purple berry, is, we believe, the most prolific large berry and yields most to the acre of all berries. The No. 4 is larger than the Columbian, prolific and ironclad hardy. It outclasses all other berries in every way except quality, and this is mild and palatable for this reason but lacks the richness of the Cuthbert and does not compare with the wonderful flavor of the St. Regis. No. 4 is a beautiful dark red color and berries approximate an inch in diameter and one cane eighteen inches high, can have a hundred and six berries (second year late planting). On its record, it bids to displace all other berries as a commercial berry. Am eager to extend my planting as rapidly as I can get plants.

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The Mid-West Exposition

By Thomas F. Rigg, Iowa

PREPARATIONS to make the Mid-West Horticultural Exposition, which held its first show in Des Moines, Iowa, December 10-13, an annual and permanent affair are already under way. Those who attended this show had the fact forcibly presented to them that this exposition is an important and vital factor in the development of the state's horticultural resources. Many have attended most of the large apple shows held in this country and the show held in Des Moines was among the best ever staged in the United States. Prominent members of the State Board of Agriculture and of the State Horticultural Society approved the suggestion made that the exposition be established as permanent feature of the state's development. Governor Harding went on record favoring the movement. Hon. John Bowne, active in all matters pertaining to

Moines; Bolcomb & Teoaker, Sioux City; C. E. Harvey, Altoona; C. C. Taft, Des Moines; C. F. Webster, of Mankato, Minn., and Mr. Wedge, of Albert Lee, Minn.; Geo. Frost, Clear Lake, also put up large and fine displays. The showing made by the growers was certainly an eye-opener as what can be done in Iowa and Minnesota when they resolve to do it.

One of the most interesting displays was that made by Frank O. Harrington, of Williamsburg. Here we found the best colored Staymans I have ever seen, and I have seen this variety in North Carolina and in all other localities where it is raised at its best.

The most artistic display in the show was that of C. E. Harvey. It was a show within itself. Here were shown 75 varieties of apples, 18 varieties of crab apples, 6 varieties of plums, 12 varieties of pears,



Miss Ada Harvey

Miss Anna Harvey

the advancement of Iowa's interest, has offered his services to join with a committee representing the exposition before the state legislature to ask for the necessary financial aid. Prof. Beach, whose influence in the matter will be very great, has entered in the movement, as have all the fruit growers of the state. It was indeed a wonderful showing of apples which Iowa made at this exposition. It was an emphatic declaration by the agriculturists of the state that hogs, corn, cattle and republican voters are not the only products of the state. The size, coloring and uniformity for the various varieties of apples shown was proof that at last Iowa growers are giving their orchards thorough cultivation, pruning and spraying. We who have been attending the apple shows in Iowa for many years—shown by the State Horticultural Society—did not here find the diseased and wormy apples we used to see in the fruit shows.

Interesting Features

To me one of the most interesting features of the show—I may say the outstanding feature—was the display of more than 137 seedling apples. These apples are from trees bred and grown by that old man of horticulture, Chas. E. Patton, at Charles City, Iowa, up near the Minnesota state line. Mr. Patton began his work in the early eighties on the then bleak and wind-swept prairie of Iowa. No such a collection of seedlings has ever before been shown in all America. Here are apples of correct size, wonderful coloring, fine quality and extreme hardiness.

The truth is that the Iowa growers must find a variety to take the place of Jonathan and Grimes Golden, as these varieties are always more or less injured in the best winters. And Mr. Patton, I believe, solved this problem.

Particularly attractive and interesting and educational were the large exhibits of H. True, Edgewood; C. F. L. Clemens, Endorf; C. O. Garrett, Mortesello; Enright, Patterson; B. Stewart, Des

and a large collection of grapes and nuts. Specimens of Northwest Greenings, Jonathans, Ben Davis and Stayman Winesap of 1917 production were shown, and they were in good condition. This wonderfully attractive display was arranged in all its detail by the Misses Harvey. In every feature it showed the effects of "the gentle touch of a woman's hand," and its nicety of arrangement, attractive color schemes and blendings were very pleasing and attracted special attention. Their floral display was also most fetching, and among all there was nothing so fair and inspiring as these young ladies, teeming with health and vigor and the glad light in sparkling eyes, which is but the reflex of the enthusiasm they have for their work with fruits and flowers, out in the open, where their fair faces are kissed by the sunbeams which leave red roses on their cheeks.

Vegetable Display

The vegetable display was a creditable one. The potato exhibit was, perhaps, the leading feature. Nebraska was first on Early Ohio and Irish Cobler, while Wisconsin took the blue ribbon on Triumph Green Mountain and Rural New Yorkers. Nebraska won the sweepstakes prize on collection.

The social features of the show were very pleasing. There were addresses by Governor Harding, Harvey Ingram, Dean Pearson of the State College at Ames, and others. Senator Dunlap of Illinois gave a lecture on his observation of orcharding in the west, illustrated with lantern slides.

The meetings of the State Horticultural Society were very interesting. Valuable papers were read by leading growers. After listening to a paper on "A National Law to Regulate Commission Merchants," by Samuel Adams, of the AMERICAN FRUIT GROWER, the association unanimously adopted a resolution favoring such a law and will petition Congress to enact a measure in accordance with Mr. Adams' suggestions.

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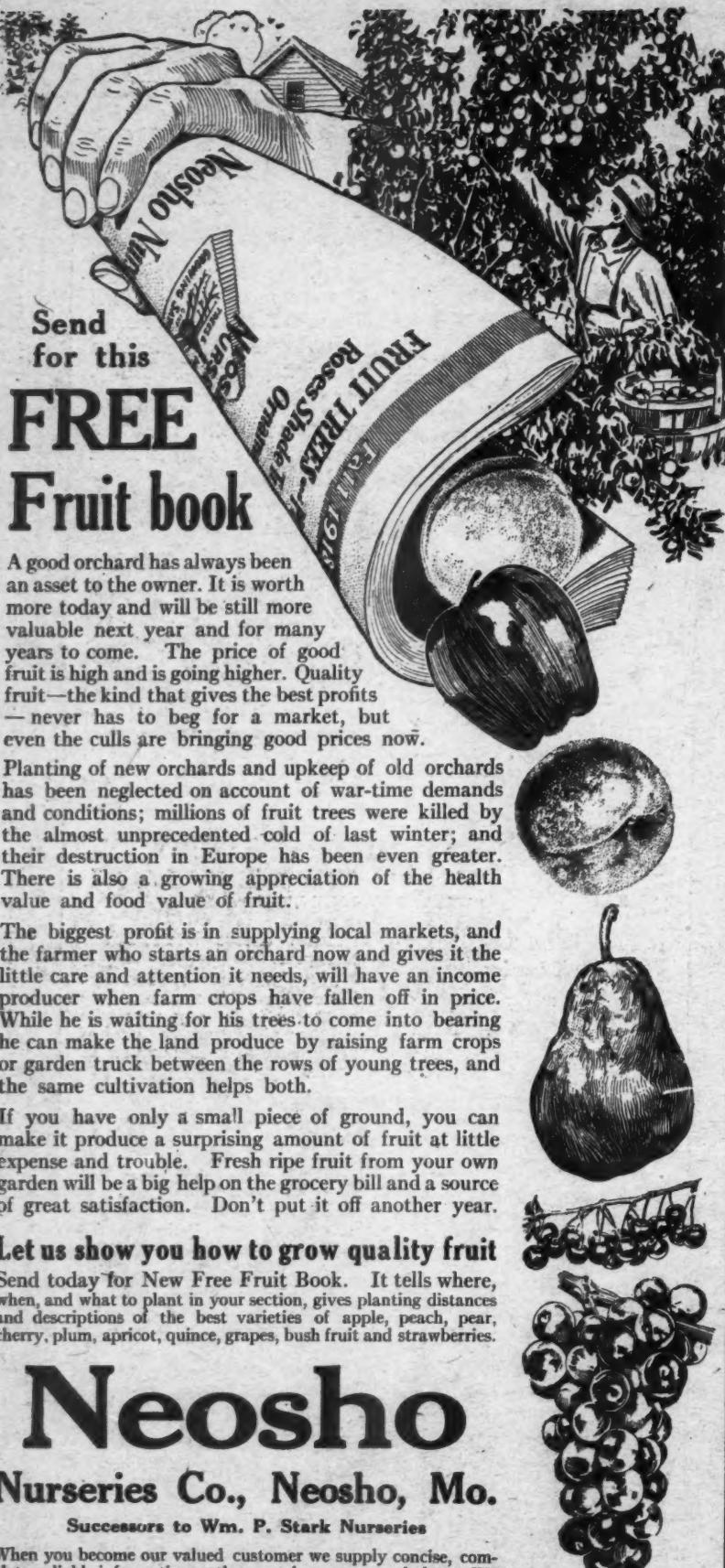
with your biggest outfit. One man can spray as rapidly and efficiently using this gun as two men using old spray rods and nozzles. Throws full fog to long distance spray and back cut-off by turning handle. Operator can stand in one place and spray from bottom to top of trees or vines versa by simply turning handle of gun. Durable, efficient, easy to clean. Can be carried anywhere.



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A good orchard has always been an asset to the owner. It is worth more today and will be still more valuable next year and for many years to come. The price of good fruit is high and is going higher. Quality fruit—the kind that gives the best profits—never has to beg for a market, but even the culls are bringing good prices now.

Planting of new orchards and upkeep of old orchards has been neglected on account of war-time demands and conditions; millions of fruit trees were killed by the almost unprecedented cold of last winter; and their destruction in Europe has been even greater. There is also a growing appreciation of the health value and food value of fruit.

The biggest profit is in supplying local markets, and the farmer who starts an orchard now and gives it the little care and attention it needs, will have an income producer when farm crops have fallen off in price. While he is waiting for his trees to come into bearing he can make the land produce by raising farm crops or garden truck between the rows of young trees, and the same cultivation helps both.

If you have only a small piece of ground, you can make it produce a surprising amount of fruit at little expense and trouble. Fresh ripe fruit from your own garden will be a big help on the grocery bill and a source of great satisfaction. Don't put it off another year.

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Apples, Pears and Cherries

By Alvah H. Pulver, New York

IN A RECENT issue of the AMERICAN FRUIT GROWER, D. J. Ellsworth, of Connecticut, raises the inquiry as to whether apple trees over 60 years old are inclined to stop bearing.

I would like to say that here in Wayne county are some of the oldest orchards in Western New York, and included among them are many that have reached the century mark and are still bearing. I believe it may be definitely stated that the life span of the apple tree has not yet been

tention he is annually reaping a nice come from the cherries.

Located less than a mile from a cannery factory, on the edge of the village, with many pickers living within handy reach, this grower has now set out all roadside and lanes facing his land to cherries. His farm has two entering roads, a lane connecting the two, and he has put out both sides of the lane to cherries.

The practice of setting out roadside cherries is one that is to be heartily commended and encouraged everywhere. It is a most inspiring sight to behold the blossoms and later the fruit in season, as one passes such places, but the practical and profitable side of the venture should appeal to those who have available spots of this kind. In some sections it is the prevailing custom to set out roadside peaches, and to me it is always a sign of thrift to see such a sight.

Bartlett pears are here shown grafted to the Flemish Beauty variety. This grafting work was done on the farm of C. H. Mills, Sodus, N. Y. The grower had the work done in an effort to produce a pear orchard.



Roadside Cherry Farm of C. H. Mills, Sodus, N. Y.

ascertained. The old bearing trees of this section are trees that came into maturity after a dozen or more years, the early fruiting methods not being known or practiced in the long-ago. However, under modern methods I should feel very reluctant to make any prediction on the life span of the apple tree of today.

A fine stretch of roadside cherries is here shown, the variety being the Montmorency on the farm of C. H. Mills, Sodus, N. Y. For years this roadside was but an average one, producing a little hay and being for the most part left to itself. When the owner set out a Wealthy orchard just off from the road it occurred to him that for the roadside itself a nice row of sour cherries would well repay the investment required. His judgment has proved most sound, and with spraying and careful at-

ter the Bartlett strain without the high climbing qualities of the Bartlett. It is expected by Mr. Mills that the united varieties will produce trees partly on the dwarf type, enabling a saving at harvest time without sacrificing any of the Bartlett qualities.

The Dearth of Small Fruits

By Janet Van Osdol, Illinois

THREE seems always to be a shortage of fruit in the local markets. The demand far exceeds the supply. When inquiry is made as to why eating apples are retailing at \$1.00 a peck, the reply is, "There was a small crop." When small fruits sell at an almost prohibitive price and the reason for it is sought, the reply is, "There was a short crop."

In truth, there seems to be a perennially short crop. Sometimes weather conditions or a visitation of blight, or insect pests cause a shortage regardless of the acreage set to fruit, but the reason there is always a shortage is because in section after section of this fertile country the quantity of fruit raised is negligible.

"They never have raised fruit around here, nobody does it, so why should I?" said a man who lived in a country neighborhood practically barren of fruit.

Perhaps he was missing his big opportunity by refusing to step aside from the beaten path, for what a market for fruit there would have been right in his own vicinity!

Uneven Distribution of Fruit

All kinds of fruit cannot be raised in every climate, but some kind of fruit can be raised in every climate, and with the right knowledge the soil can be built up to do almost anything we want it to do.

We all know that, in spite of the dearth of fruit in many parts of the country, tons of it go to waste in other places. Some of it rots on the trees and on the ground. But that is because our transportation facilities are such that the fruit cannot be, or at any rate is not, brought to the people who would buy it up eagerly at a good price. Some day these conditions may not exist, and there will be an equitable distribution of the products of the land, but that day may be far distant. So it is up to every man and every woman to do their part in producing whatever fruit will do well in their vicinity and on their soil.

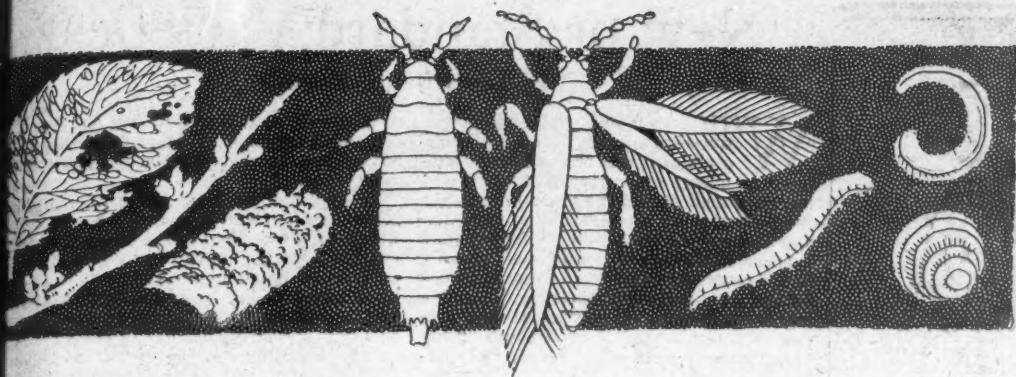
The small fruits give quick returns—fact, so quick and profitable are the returns that the wonder is there is not a greater demand on the market instead of a dearth of them. To be sure, if they are raised in any great quantity, there are certain times of the year when they make a great deal of money, and they cannot be neglected at this time. That is why farmers often do so little with them. But this gives the women and girls the better opportunity.

A Girl's Success

A few years ago I visited a farm in a beautiful section of the country. It was so revealed that neither on this farm nor on any other in that neighborhood was fruit raised. After dinner, the sixteen-year-old daughter took me aside and said, "There isn't anybody around here raises any kind of fruit except a few apples and cherries, and they are not of much account. I've been wondering if I could raise strawberries and currants. Pa gave me the ground, and he had thought maybe I'd go to work out town. But I'd rather try the fruit if you thought I could do it. I've got a few dollars saved that I could buy stock with."

The result was that the girl set out strawberries and currants. In three years she had created a market that far exceeded her output. By that time, however, other women of the neighborhood had seen her profits, and they too had set out small fruits. So the girl turned some of her extra customers their way. But in spite of the fact that now nearly everyone in the neighborhood is raising some fruit, the girl still finds a good market for it.

What is true of this vicinity, is probably true of nearly every fruitless section of the country. Fruit pays everywhere, so long as it can be got to the people who can, or do not raise it. A man who has an idle piece of land that he does not set to fruit is robbing his pocket as truly as though he were taking dollars from it and throwing them along the roadside.



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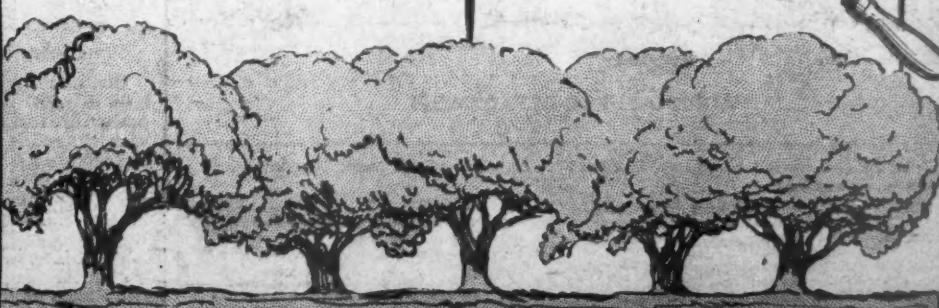
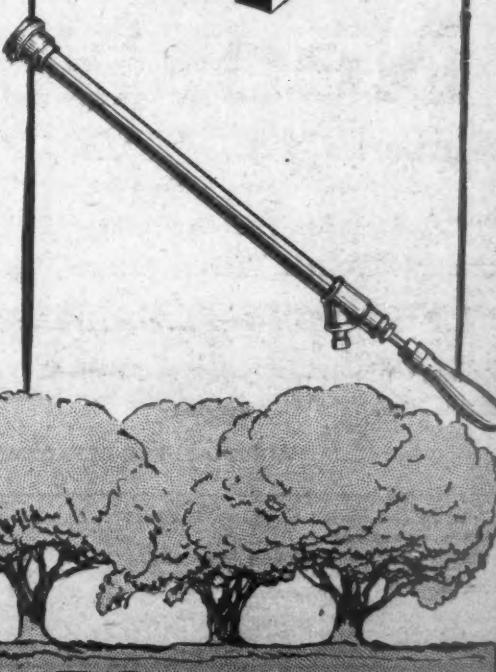
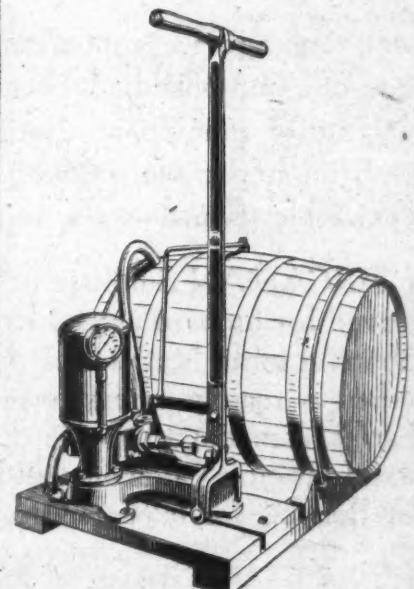
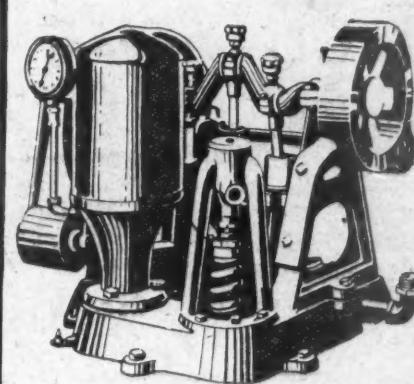
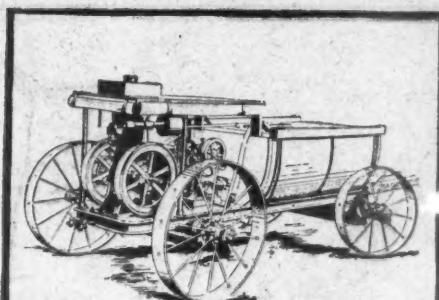
the flat irrigated orchards of the Pacific Northwest where the fine box apples come from; on the steep hillsides of the Ozarks and the Blue Ridge Mountains of Virginia; in the big peach orchards of Georgia and Texas; in the citrus groves of Florida and California; in far away Australia, New Zealand and South Africa, the Hardie Sprayers are preferred by the experienced grower.

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- No. 83. The Production of Sulphate of Ammonia for 1915-16.
- No. 84. "Sulphate of Ammonia: Its Source, Production and Use."
- No. 85. "Fertilizing the Apple Orchard."
- No. 86. "More Wheat."
- No. 87. "Let Us Help You to Study Farming."
- No. 88. "Potato Production."
- No. 89. "Sulphate of Ammonia for Vegetables."
- No. 90. "Which Source of Nitrogen is Best?"
- No. 91. "Sweet Potatoes and Yams."

Kindly Mention American Fruit Grower when writing to Advertisers

WITH many young planters it is a question which to buy, the old standard sorts or the newer varieties. As a large proportion of the trees sold come through agents the new varieties get the best of it by all odds, often to the disappointment of the planter. For my part I do not like to buy of agents at all, and if I find it necessary to do so I will prepare my list independently of the agent. He gets a higher commission on specialties, and it is to his interest to push them to the exclusion of the old sorts, and while he may be perfectly sincere in his opinion as to their superior qualities seldom is he in a position to know much about them except what the literature of his nursery tells him.

I am not saying that I would never buy new sorts, for I do, and would not like to let promising new sorts pass without giving them a trial, but it is wise to give them a trial, and not to plant them extensively. The really valuable new sorts are sold by most reliable nurseries, except for the first year or two of their introduction. I have always preferred to buy direct from a good nursery where I can take down their catalogue and select just what I want without having an interested agent trying to tell me what I want. If I do not know myself I will prefer to get the information from my State Experiment Station, which will be able to give me information based on actual knowledge of what varieties do best in the locality.

Old-New Varieties

A large percentage of the new varieties of fruits are but slight improvements on older sorts. Take the cherries. There are three standard varieties, and these are very distinctive, but nearly all the new varieties are just supposed improvements on one of these and often could not be told from it. There are dozens of new cherries that are really Morellos under a new name, and quite a number that are Montmorencies. I do not think the Early Richmond has so many new varieties patterned after it. Still some of these new sorts will be found somewhat superior to the old, especially in

some places, so it is well to find out if you can which they are. If you cannot do so I advise you to stick to the old varieties every time.

In apples there have been some great improvements, and it is easy to find out which of these have stood the test. In peaches I do not know of any recent discoveries of much importance so far as I have heard of actual tests. Quite often agents will have a variety on their list as a new specialty that has been sold as a standard variety by most nurseries. One year an agent came around extolling the Carmen Peach which he was selling at a dollar a tree. It happened I knew that a reliable nursery was selling this with other standard sorts at thirty-five cents per tree. It is needless to say my confidence in that agent and his list of specialties dropped to zero. The peach is a good one, and probably a number of his specialties were good, but not worth paying three prices for the privilege of buying from him.

Experiment Stations' Reports

With fruit trees we can have little chance to try them out, and must depend largely on the experience of these who have done so and whose report can be depended upon to be decisive. That is why I prefer State Experiment Station reports, for the men in charge know what is desirable and whether the tree measures up to the standard. Then they are in touch with the orchards all over the state and know the results.

With small fruits it is different. We do not waste much time or money in trying out any new fruits for ourselves. The last few years have seen a number of promising introductions in the berry line, and the tendency is toward everbearing qualities. The everbearing strawberries have made a place for themselves, and now we have everbearing raspberries and blackberries. It is not a bad idea for all of us to test these out at once if we have not done so, for there is no reason why we should waste a season or two waiting for others to do it, if they should prove valuable.

Suitable Storage Conditions

APPLES should be picked when well matured but not over-ripe. In all the operations of picking, packing and hauling they should be so handled as to avoid bruising, skin punctures and other mechanical injuries; and they should be so graded as to be practically free from serious injuries caused by insects, diseases or mechanical means. It is essential that they be handled promptly from the orchard to the storage room and cooled quickly. Only varieties that have a recognized storage period of three months or more should be considered.

Cold Storage Houses

Cold storage houses should be so constructed and equipped as to maintain practically uniform temperature and humidity conditions throughout the storage season. Common storage houses should be sufficiently insulated to prevent freezing, and should be provided with the necessary inlet and outlet vents to permit adequate ventilation and temperature regulation.

Cold storage temperature range should be 31° to 32° F. for the storage of apples. Common storage should be maintained at from 31° to 36° F. after the initial cooling of the fruit. Humidity range 80 to 90 per cent. Apples should be stowed with sufficient spacing to permit of free air circulation, and to render each lot readily accessible for inspection and withdrawal.

Clean, Strong Containers

Containers should be clean, strongly built barrels, boxes or crates, and when packed for market shall be plainly marked with the grade, variety and the grower's or packer's name.

All lots of apples should be inspected when received for storage by a qualified inspector. Subsequent inspections of representative packages of all lots should be made at intervals of 15 to 30 days, depending upon the variety and condition of fruit when stored. The shrinkage in cold storage is from 2% to 5%. In common storage the shrinkage is variable.

Attention is directed to the fact that a

delay of one or more weeks between the picking and storing of apples greatly reduces the storage period of the product and results in early deterioration. The successful storage of apples is as much dependent upon the treatment they receive before being placed in cold storage as the conditions under which they are held in storage. For further information on this subject send to the United States Department of Agriculture, Washington, D. C., for Bulletin 587.

BULLETINS WORTH READING

Management of Common Storage Houses for Apples in the Pacific Northwest, Farmers' Bulletin 352, U. S. Department of Agriculture, Washington, D. C.

The Farm Ice Supply, State College of Agriculture, Ithaca, N. Y.

Water Systems for Farm Homes, Circular 49, College of Agriculture, University of Missouri, Columbia, Mo.

Value of Nitrate of Soda in Crop Production, Bulletin 323, Agricultural Experiment Stations, New Brunswick, N. J.

Influence of Lime Upon the Yield of Dry Matter, and Nitrogen Content of Alfalfa, Bulletin 316, Agricultural Experiment Stations, New Brunswick, N. J.

Horse Beans, Farmers' Bulletin 969, U. S. Department of Horticulture, Washington, D. C.

Preventing Wood Rot in Pecan Trees, Farmers' Bulletin 995, U. S. Department of Agriculture, Washington, D. C.

PEACH LEAF CURL

It is not too early for farmers in the section where peach leaf curl is found to apply a fall spray for this affection. It has been demonstrated that fall spraying is as effectual in controlling this disease as is spring spraying, and often it is more convenient to spray in the fall. Bordeaux mixture, or lime-sulphur of the strength used for San Jose scale should be applied. If there is no scale present the spray may be somewhat weaker.

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Plant Nursery Stock with a Production Record

SLECT your nursery stock as you would select a tractor—because of its proven record. For thirty years, Harrisons' Quality Trees have been establishing records in thousands of orchards.

From the very first, we have followed the practice of cutting bud sticks from selected bearing trees. This assures a uniform high quality of fruit and a distinct tendency toward liberal production. This one precaution will save you many hundreds of dollars yearly throughout the bearing life of the orchard.

Harrisons' Trees are graded liberally; you get bigger-than-usual trees for your money. Planted practically in every State in the Union, they have proved extremely hardy. The roots come to you clean and bright. They have developed wonderfully in our rich sandy loam—every tree grown under the personal supervision of a Harrison, trained from boyhood in nursery work.



EVERGREENS and HEDGE PLANTS

No orchard is complete without a windbreak, especially if exposed. A belt of protecting Evergreens will save you money by preventing windfalls. Plant Evergreens too, on the lawn. We have an immense stock of bushy, vigorous Evergreens: Spruce, Hemlock, Arborvitae and others.

For hedge Planting, we recommend Thunberg's Barberry; it requires little or no trimming and is absolutely hardy.

NORWAY MAPLES and FLOWERING SHRUBS

Norway Maples grow rapidly; provide a dense shade and do not drop dead branches. Plant Norway Maples along the roadside and on the lawn. We can supply them in all sizes—7 feet to 16 feet in height.

Flowering Shrubs add the finishing touch needed to complete the home grounds. Select from our stock for a succession of varied bloom: Spirea, Deutzia, Hydrangea, Mock Orange and others.



Our 1919 Nursery Book is more than a mere catalog. It is a direct personal message to you from us, who are devoting our entire time and energies to building up fruit-growing industry. It is packed with helpful suggestions and with clear, accurate descriptions of tested varieties. Send for it today—free.

"Largest Growers of Fruit Trees in the World"

Harrisons' Nurseries
J. G. HARRISON & SONS PROPRIETORS

Box 52

Berlin, Maryland



With Our Editor

No Reduction on Sprayers

WHILE attending several State Horticultural Society meetings last month we found that many fruit growers were waiting for "after-the-war" prices on sprayers. To learn the facts in regard to this season's prices, we communicated with all of the leading spray manufacturers of the country, and on another page will be found their telegraphed replies.

As you will see by the telegrams, there will be no reduction in prices this season for the reasons given. We urge fruit growers to place their orders at once, so that they will have their sprayers when needed. All indications point to very high prices for fruit in 1919, and the grower who fails to give the most careful attention to spraying will throw away many good round dollars.

Do You Like This Magazine?

THE AMERICAN FRUIT GROWER's aim is to satisfy its readers. We hope we have, in this New Year's issue, made a pretty good guess at the taste of our subscribers. But maybe we've missed it in some instances.

Not every one thinks alike. Many men, many minds. All of you are primarily interested in fruit growing, so we all have one big interest in common, and now we want you to tell us frankly what your individual ideas are.

In five minutes you can answer the following questions, and we shall esteem it a favor if you will take the time to do so and to send us your reply. We think you will be rewarded for your trouble by a magazine which, month by month, more nearly approaches your ideal.

1. *What Do You Think of this Issue of the American Fruit Grower?* Its general appearance? Its contents? Its editorial pages?

2. *What Do You Like About It?* What especially appeals to you? What has interested and helped you in its contents?

3. *What Don't You Like?* We do not expect you to find every department personally absorbing. If you have no bees or chickens remember there are others who have, and maybe some day, after we have talked to you often enough about them, you will also.

4. *What Would You Add?* Is there something that the man or woman, girl or boy who reads this, would like to see and cannot find in our pages. If so—what is it?

5. *What Could Be Left Out?* Do you see anything here that, in your opinion, is of no interest or profit to anyone in the fruit grower's family? What is it that you would omit?

Like other publications we have lately been greatly hampered in the development of our magazine by the War Board restrictions on the use of paper. Now these restrictions have been lifted, and we are in a position to carry out not only our own ideals of a fruit growers' magazine, but yours as well.

Help us to make just such a publication as you want. Write to me personally and give your answers to the above questions. Samuel Adams, Publisher AMERICAN FRUIT GROWER, 329 Plymouth Court, Chicago.

A National Apple Show

ILLINOIS held the first comprehensive Apple Show of Illinois apples in Chicago during the month of November. This Apple Show was a great success and a stimulus to horticultural advancement. The Illinois apple growers were unanimously in favor of holding another Illinois show in Chicago next year, but at the suggestion of the Chicago Association of Commerce, together with the representatives of some other states, to hold a National Apple Show representative of the apple business of the United States. The Illinois growers cheerfully joined in with the suggestion that a greater Show, representing the apple industry of America, was the logical thing to do.

At the time of going to press the matter of a National Apple Show is in formation and it is probable that a national organization will be formed for this purpose or it may be held under the guidance of some national organization now in existence. Chicago is probably the largest distributing center of apples in the United States and the City of Chicago together with the surrounding country is as large, if not the largest, consumer of apples in America and a true representative Show of the apple industry cannot help but be of great educational value to the consuming public, as well as commercial value to the grower.

City Criticizes Country

SOMETIMES the farmer is tempted to believe that the cities cherish positive malice toward the country, but probably ignorance plays a larger part in the criticism we so often hear as to the remarkable profits which the farmer makes on his produce of all kinds. It is not our wish that our city cousins should pity us as a poverty-stricken lot in need of charity (save such charity as is exhibited in an unprejudiced view of the situation), but we seriously object to half-baked reporters bringing themselves into notice by violently and ignorantly espousing the cause of the consumer as against the profiteering farmer.

Just a few days ago we were listening to the lament of the city on the price of eggs. "But," said the speaker brightly, "I think this outrageous situation will end after the exposure in the morning paper." We asked to see the paper in question and there we read such intellectual stuff as the following: "Farmer Baranec, who may have raised these six turkeys, three geese and thirty-seven chickens on the products that would have gone to waste, was given a price of forty-one cents per pound for his turkeys. Out of this came express, government tax and commission of 5% netting the farmer about thirty-eight cents per pound."

There was a good deal more in the same vein, but why continue quoting a writer who thinks that poultry are raised entirely on waste products, and who does not know that the high price of feed forced many poultry raisers out of business, so that now it is not so much a question of how much is to be paid for eggs as whether there are any eggs to pay for?

Children, when they get "good and mad" say "Aw, yer make me tired." To this young (we hope he is young for that gives him time to change) reporter, we say the same.

\$20 for Engine Experience

FOR THE four best letters on the use of gasoline or kerosene engines by our readers, we will give four cash prizes of \$10, \$5, \$3 and \$2. For acceptable photographs showing engines at work, we will give \$1 each.

We want to know what uses fruit growers have put engines and how they act under different circumstances. There are many of our readers who contemplate installing engines, and who would be glad to get the first-hand experience of others. They wish to know the advantages and disadvantages of the engines, and what is the saving in time and labor, as well as what the cost of operation and repairs has been to a number of users.

All letters in this competition must be sent in by January 31, 1919.

There is no rule as to the length of letters, but brevity that is consistent with full information is preferable.

Address, Editor "Tractor and Truck and Engine" Department, AMERICAN FRUIT GROWER, Chicago, Ill.

Soldier Fruit Growers

THE GOVERNMENT is making strenuous efforts to place a large number of the returning soldiers on the farms. It is thought that after the active, open-air life of the past months, the young men will find themselves cramped in the narrow confines of store or office and will turn with longing toward the free spaces of nature.

A good deal of land is to be placed at their disposal, but a large number will prefer going to the already settled rural communities. They should be a splendid asset for any neighborhood because they have learned many fine things through their recent experience. All their latent energies have been developed.

It will lie in great measure with the women of any community whether these soldier farmers and fruit growers will be satisfied. You may be sure they will not be unless a good community spirit is shown them. Community leagues everywhere will not fail to take note of this, and organized measures should be taken to show the boys that they have not come to a "dead" place, but to one which organizes its efforts somewhat as an army does, and out of individual weakness makes community strength.

A Community War Park

THE SUGGESTION to plant memorial trees to our dead heroes is a beautiful and commendable one. But are we to honor the dead alone? Why not the living who were ready to lay down their lives if need be? Their spirit was as brave as that of those who made the supreme sacrifice. Soon they will be coming home to receive all the devotion and appreciation we can offer.

It would be a fine thing for the living boys if every rural community should fix Arbor Day this year for planting trees in honor of all the men who left it at their country's call. If there be a suitable place that could be set aside and called Liberty Park, it would be inspiring. If no such spot exists there is always the school yard, and after all no better place could be chosen.

Let each scholar who has a friend or relative in the war, bring a good tree on Arbor Day and plant it in the group that is to be dedicated to the soldiers and sailors of the community.

Teachers will consult with the children beforehand and guide their choice to a wise selection either of native trees or of hardy and beautiful nursery stock. Fruit trees, of such long life, and such charming appearance as the apple, should by no means be excluded. Remember also, that trees attain a great spread in later years, and therefore avoid too close planting. Fitting ceremonies would draw the whole neighborhood together and the occasion could be made interesting to all.

Prohibition on the Way

ONE SPLENDID thing for the boys themselves, as well as for the place they will come to, is the widespread of prohibition. The good effects of this seem to be more quickly and decidedly felt in the country than in the cities. Indeed the cities have stood squarely in the way of the passage of temperance bills on more than one occasion.

We must be on the alert for the insidious propaganda of the liquor interests. A case in point is that during the recent, and at present reappearing, "flu" epidemic, we were told through many newspapers that whisky was the acknowledged best treatment for pneumonia. That the government was calling on the stores of confiscated liquor to fight the epidemic. We believed this and were sorry to know there was an illness which demanded such treatment, because we foresaw the danger which it introduced.

However, what do we find now? That the whole thing was a deliberate campaign by the liquor interests. Prominent articles would appear in the daily papers dwelling on the benefits of whisky in dealing with the epidemic. Of course, we read eagerly everything connected with the dreaded disease. We were told that Camp So-and-So, was using it by the barrel under the doctor's direction. Had we read a number of papers we might have noticed that the name of the camp always changed to that of the one nearest the town where the paper was pub-

lished, but that otherwise the text remained the same. Most people did not suspect the widespread propaganda, but since it has been exposed we know what to think, not only of the panacea, but also of the interests that did not scruple to advertise it.

When Worry Wearies One

THERE'S always something to worry about if you are the worrying kind. Not much chance then of your being a cheerful companion for others, and as for yourself, who has to endure you in sickness and in health, we do pity the poor creature.

Farmers, perhaps, have greater temptation to worry than most business men. A business man always feels that he can at least put up a good fight, but after the farmer has put up the best possible fight in the way of cultivation, fertilizing, spraying, etc., there's one enemy left that no human power can control—we mean the weather.

In the spring I met a man whose face showed that he was the worrying kind. In two minutes he had confided to me his fears of a late frost on his fruit. He had cold feet so badly that he was sure his trees were being frozen. But never a bud was nipped.

He was with me one day when a rather ugly black cloud with pinkish fringes, rolled up, accompanied by a keen little breeze. His wail of terror lest hail descend upon the tender crops was, to say the least, not reassuring. A refreshing shower rewarded his agony. Lately he knew that the delightful cool weather had spoiled the corn, and when the heat came in the nick of time, he could "just feel the ears drying up." Oddly enough, as he talked, the rain began. Now, I thought, he is satisfied for once, so I congratulated him, only to learn that moisture was terrible for bitter rot on apples.

I almost hope his trees will get it, but if they do, mine, which are adjoining, would likely develop it too. I guess he is punished enough by all his useless anxiety.

Community Fairs

PROGRESS has been likened to a spiral of which the curve rises and dips, approaching former conditions, yet at each turn reaching a higher point than before.

Just now we are witnessing a pronounced tendency to return to the old home industries, yet the return shows a difference and the home product is on a higher scientific plane than was that of times gone by.

So, too, we are going back to the old-time community gatherings, and these, informed by the new spirit of progress, are serving in many ways to elevate the standards of whole communities.

Rural neighborhoods offer the best field for such lines of endeavor and we are glad to note the beneficial effects in a small Virginia neighborhood of a recently held Community Fair which was so excellent as to surprise the whole county in which it was held. In the first place, we note as being worth more than any other feature of the occasion, the fine spirit of "get together" which was evident. Rich and poor, old and young, were equally interested in every detail.

Many a housewife, who contributed

purely from a spirit of helpfulness in order that the exhibition shelves might not be empty, was surprised to find herself the proud winner of blue ribbons. Not only was she surprised to know that her own product was held worthy in the expert judgment of the county agents, but also she felt amazed to see that practically all of her neighbors excelled in some particular line, and the mass of exhibits was both excellent and beautiful.

Both men and women vied in the quality of their home-grown fruits, vegetables and livestock. And here is the value of such an exhibition—many a visitor was heard to comment, "I'll surely get in on this next year. I had no idea it would be like this. I'll begin to plan right away for the next fair." You know when they do begin to plan in this way the farmers and their wives will try a little harder and put a little more intelligence into their work which is to be put into competition with that of others. The entire grade of community products will rise.

In such entertainments the amusement feature should not be overlooked. It is when the heart is happy that the most spontaneous impulses of friendliness are felt. People who had not addressed a personal word to each other for years, were seen exchanging jokes, recipes, methods and ideas. It was all good, and every rural community is the better for some such gathering at least once a year.

Unappreciated Blessings

MOST of us are so fortunate, without knowing it, that we feel privileged to complain when anything less pleasing than what we are accustomed to occurs. If we habitually sleep soundly, we feel injured by an hour or two of wakefulness, rather than profoundly grateful for the nightly blessing. If we are strong and active, we never think of the delight of free motion until we lose it temporarily through some accident.

Sight may not impress us as a subject for thanksgiving, but the least impairment of vision is greeted with howls of calamity and a call upon gods and men for sympathy. Even so prosaic a thing as a hearty appetite (and you know how fussed you were the last time the strawberry shortcake gave out before you got your third slice), may assume an aspect of priceless worth when we lose it and the choicest fare revolts us.

The old Scotch grace took note of this in the quaint lines, "Some hae meat and canna eat. Some hae none and want it. But we hae meat, and we can eat. Therefore the Lord be thankit." We know of a mother who, in a period of sad scarcity, taught her children, when their scanty portion was served to them, not to ask, "Is that all?" but to say, "All that!" which put a different face on the matter.

There's sorrow enough in the world today to make it worth while to take stock of our blessings and to rejoice in them. Soldiers on the march to battle can shout, "Are we downhearted? No!" and that long face of ours helps neither self nor friend.



YOU'LL ALWAYS BE GLAD
YOU BOUGHT A "FRIEND"

Hundreds of "FRIEND" Power Sprayers Are Sold Each Year

They are made *large, medium and small*, and there's a size for every grower. All sizes have *unique, practical conveniences* not found in any other sprayer.

"FRIEND" sprayers are *low down and pass under the branches* without knocking off the fruit. (See above picture.)

They *can't overturn on steep hillsides*—you don't need a step-ladder for filling.

Front wheels *cut clear under* and you can turn *square around* in a fence corner.

"FRIEND" sprayers have *largest sprayer wheels made—naturally easy drawing*.

Higher power and larger capacity with much *less machinery weight*—much appreciated.

Power supplied by *motor-pump unit* insuring *perfect alignment* of gear and bearings.

Auto-Marine motor in unit construction with high pressure plunger pump.

Quick accessible valves and seats out where you can see—no pockets.

Quick accessible and adjustable packing—make adjustment with one finger.

Perfect pressure control—any desired pressure or instant relief.

Direct drive propeller agitator—keeps solution constantly mixed.

"FRIEND" sprayer equipment—all sizes sold ready for action.

"FRIEND" sprayers are better because of all these features and many more. They are scientifically designed, thoroughly standardized and built to last. All sizes are strong, sturdy and substantial and easy to operate.

The motor-pump units can be supplied for quick attachment to any sprayer.

Ask any "FRIEND" user concerning "FRIEND" features and advantages.

The "FRIEND" was the first power sprayer ever made and is now highly perfected.

Inclose this advertisement and say whether you need large, medium or small sprayer. The season is on. Others are buying. Present prices guaranteed.

Dealers and jobbers wanted.

"FRIEND" MFG. CO., Gasport, Niagara Co., N.Y.

No Reduction in Sprayer Prices

WHILE attending a number of state fruit growers' meetings in December, we found that a number of growers were delaying the purchase of needed sprayer equipment. The reason they gave was that they expected sprayer prices to be reduced at an early date, owing to the end of the war.

In order to give our readers the facts in regard to prices this season, we wrote to the sprayer manufacturers and in reply received the telegrams printed below.

We cannot urge too strongly upon fruit growers the necessity of thorough spraying this season. Now that the export market is open, prices for fruit will be higher than ever, and every grower should endeavor to raise the maximum quantity of fruit by thorough spraying, cultivation and fertilization. It means many dollars in the pockets of the growers who heed this advice.

Efficient sprayer equipment should be bought at once, and used. The telegrams follow:

AMERICAN FRUIT GROWER:

Regarding our prices on spray pumps for balance this year all our materials are bought and our costs are fixed for season. If we were to buy now materials would be higher in many cases than when we bought about a year ago and prices would advance. We have advanced our prices only in proportion to increased cost during war and have no extra war profits. If we did have, then we could reduce prices, but as it is no reduction can be made this season. It is our opinion that prices on spray pumps will be practically the same next season as they are now.

BEAN SPRAY PUMP CO.

AMERICAN FRUIT GROWER:

No price reduction possible on sprayers until cost of living comes down.

FIELD FORCE PUMP CO.

AMERICAN FRUIT GROWER:

Replies to your kind letter, growers must abandon the old habit of waiting until they are ready to spray before ordering the sprayer otherwise no manufacturer can render satisfactory service. To protect our dealers and the growers, we naturally purchased materials long ago. Labor cannot be rendered and the new peace industrial demands for material will long continue throughout the country and will naturally keep prices as high or higher. For a considerable time the present prices of Friend sprayers are reasonable considering costs and are guaranteed throughout the season. Urge the growers to purchase now while transportation is dependable.

FRIEND MANUFACTURING CO.

AMERICAN FRUIT GROWER:

The Goulds Manufacturing Co. has not made any reduction in price and guarantees all of its existing prices against any decline by itself up to March 15th. There is not the slightest chance of any reduction in sight at this time.

W. E. DICKEY, General Salesman.

AMERICAN FRUIT GROWER:

We are ready to lower prices just as soon as there is any substantial reduction in labor and material, but we see no chance of being able to make any lower prices during the next six months.

HARDIE MANUFACTURING CO.

AMERICAN FRUIT GROWER:

There will be no reduction in our sprayer prices for the first half of 1919 as all materials entering into their construction were purchased months ago. It is an established fact that sprayer prices have not been increased by anything like the same percentages as materials, labor and transportation costs. The demands for materials by all branches of industry and requirements for foreign reconstruction work will have a tendency to maintain prices indefinitely.

HAYES PUMP & PLANTER CO.

AMERICAN FRUIT GROWER:

Replies there will be no reduction in spray pump prices during the coming season.

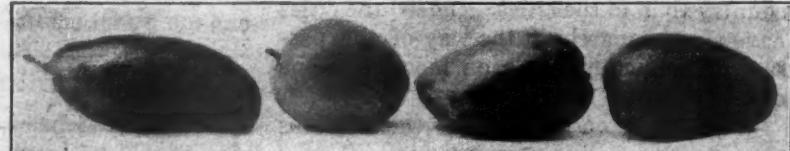
F. E. MEYERS & CO.

AMERICAN FRUIT GROWER:

We see no possibility for lower prices for sprayers for the coming season.

STANDARD STAMPING CO.

Fruits from the Transvaal



Mangoes from the Transvaal

I am inclosing photo of mangoes grown close to here. These and navel oranges were to have been exported to your country.

try in your off season, but the war stopped the venture. Yours respectfully, O. H. FREWIN, Middleburg, Transvaal.

Raspberries in Carolina

Editor of AMERICAN FRUIT GROWER:

I am growing raspberries for market (in a small way). In some paper I saw a method for wiring-posts, two and one-half feet high with two-foot pieces nailed to top of posts and wires on end of these running with the rows. I also saw directions for pinching new growth at two feet high, and also side branches when twelve inches long.

I kept this up all summer. One authority said I kept the pinching up too long, but even so some of the branches nearly reached the ground in their anxiety to make new plants. In addition, the vines reached a height of six feet. When the vines were heavy with green fruit, they bent over the wires, with the result that many broke and made a tangle that causes trouble in picking. So that plan of support will be abandoned by me.

Three years ago I set vines along a wire fence. When the new growth reached a height of four feet last summer, I took poles twelve feet long and fastened each end of poles to fence three feet from the ground, so as to press vines against the fence. I pinched these vines also. Now, at

picking time, these berries are far more easily picked than the others.

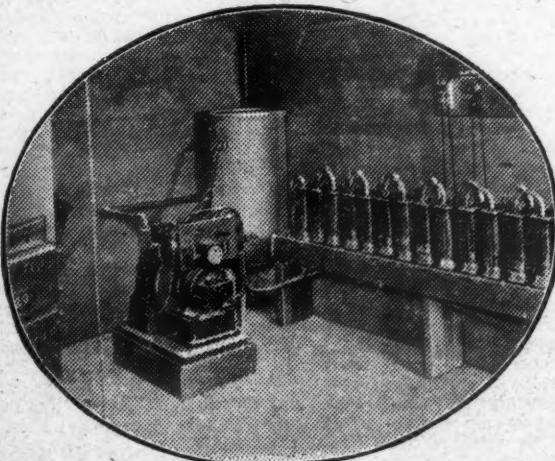
But one does not always wish to set vines along a fence, so it seems to me a good idea to set posts twenty feet apart, four feet high, and to stretch two wires, one two feet from the ground, the other on top of posts, and tie the vines to these wires. One wire four feet from the ground might do.

As to varieties—I have tried but three sorts of blackcaps, viz: Cumberland, Plum Farmer and Winfield. The latter is claimed by its propagators to be the largest raspberry. It is a trifle larger than those above mentioned, but crumbles more easily and is deficient in flavor as compared with them.

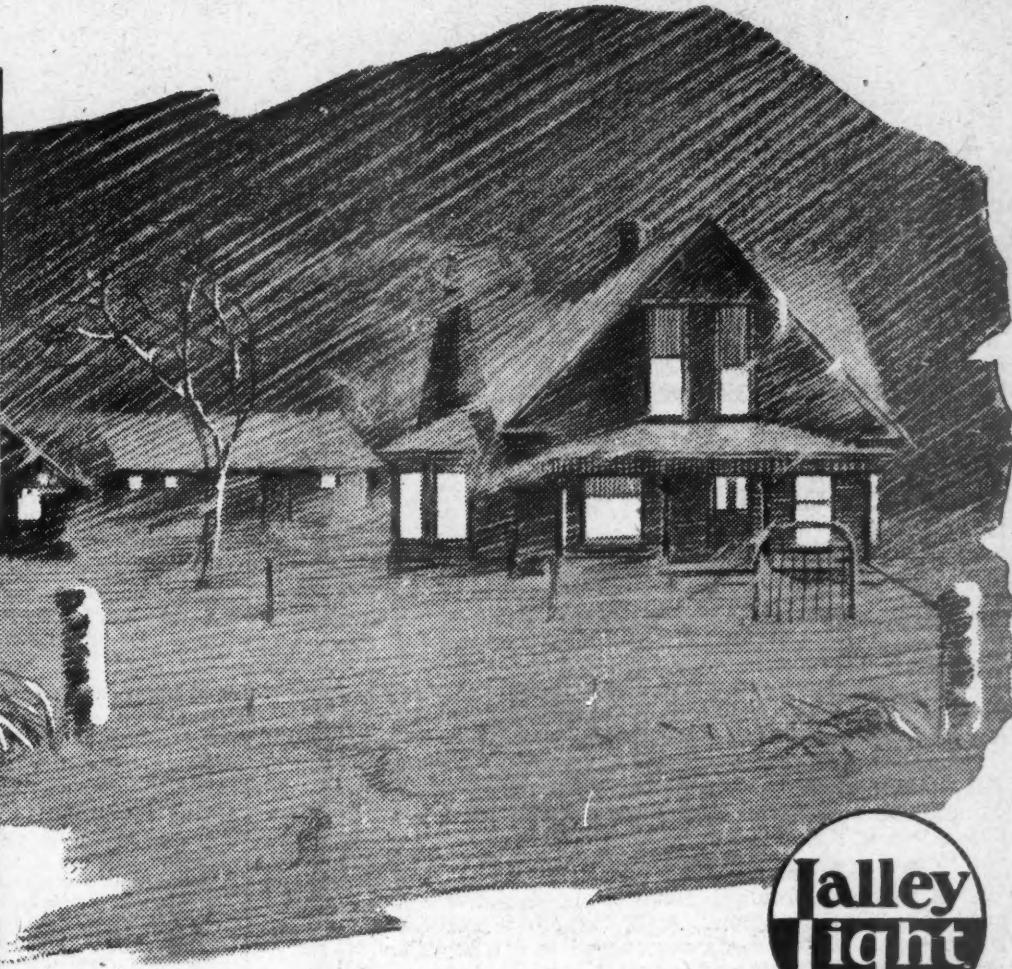
I have only one variety of red raspberry—the St. Regis, which is worthless with me, having no taste whatever. If there is a better raspberry for the market than Cumberland and Plum Farmer, I wish some of your contributors would advise me. I would also be glad to know of a better way to support vines than that suggested.

O. BROMFIELD, North Carolina.

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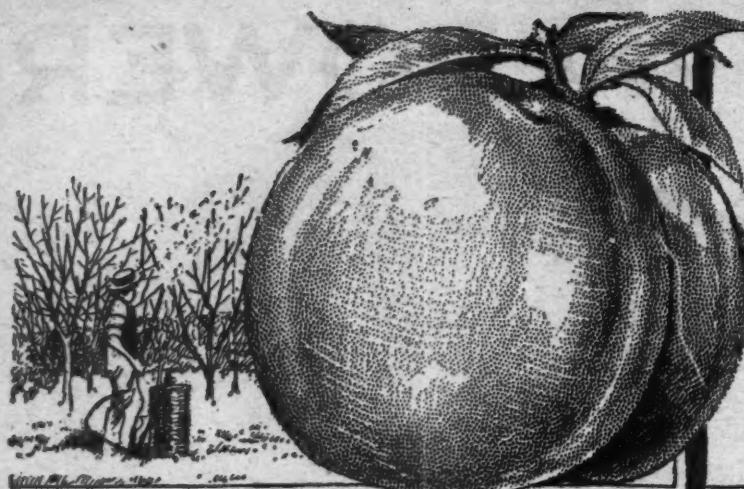
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DISEASES OF FRUITS & TREES



Some Causes of Failure in Spraying

By A. S. Colby, Editor of "Diseases of Fruits and Trees" Dept.

TIME was, and not so very long ago, when discussion was rife as to the advisability of spraying fruit trees for the control of orchard enemies. It is now generally conceded, however, that spraying, properly carried on, along with other orchard operations which come under the general term "good culture," is a necessary yearly practice yielding returns conservatively estimated at 100% on the investment.

Unfortunately, however, the past year has witnessed much spraying improperly carried on, resulting in poor control of insects and diseases in the orchard and consequent loss of faith in the whole question of spraying on the part of the individual concerned. It is our purpose at this time to outline some of the reasons why success was not always attained as a result of spraying and to point out certain ways to improve former practices.

Consider Four Topics

Four general topics are offered for consideration. The first three have been more or less completely discussed in this column before, while the fourth, of equal importance, is here treated at length for the first time.

First of all, one must know what he is spraying for and the proper material to use in controlling the trouble. Bordeaux will not control codling moth, neither can paris green be expected to hold apple scab in check, yet it is commonly believed in some localities that a spray is a spray and as such should control all orchard troubles. Here also should be noted the latest authoritative recommendations as to the use of certain spray mixtures interchangeably in the spray schedule. It has been found by extensive experiments in the middle west, that foliage and fruit injury can be almost entirely eliminated and fungus control secured by using lime-sulphur during the more or less cool, often rainy spring months, changing to bordeaux after the hot summer weather comes on. Then, too, the recent discovery that the addition of arsenate of lead, primarily as an insecticide in the regular spring applications of lime-sulphur for fungus control, will increase the fungicidal value of the latter, is an interesting and worth while fact in this connection.

Spray When Control is Sure

Again the life history of the disease or insect must be known so one can spray at the right times when control is sure. It does no good to use a fungicide like bordeaux on a tree already badly infected since the fungus is already working in the host tissue. The proper time to spray is before the fungus spores fall on the clean host surface, so that when the spores germinate they will be killed by coming in contact with the protective fungicidal coating.

Varying weather conditions and other causes bringing about changes in the regularity and virulence of fungus attack, have made it difficult to control with certainty the worst orchard diseases during some seasons. The only absolutely safe plan to follow in such cases is to spray often enough with a reliable fungicide to keep the susceptible parts of the host covered during the season. Success in the control of such an insidious fungus enemy as apple blotch the past season, for example, may thus have been directly proportional to the carrying out of such a spray program.

Third, one must spray thoroughly but stop when it is time to stop. Although every part of the tree should be well covered, it should not be sprayed till it drips, except in the case of contact applications such as are given in the dormant season for scale insects. The best work is done when the leaves, fruit and even the bark are covered with the fine mist of innumerable

drops of spray, just up to the point where the application of any more would cause running together and dripping off at the tips of the leaves.

Get and Keep Good Outfit

It almost goes without saying, however, that the orchardist should own a good spray outfit, one large enough to adequately care for his needs. Even with the price 33 1/3% higher than pre-war figures, there should be no disposition to hang back on its purchase or attempt to economize through buying a cheap outfit.

The writer has in mind a barrel outfit costing, complete, less than \$15 eight years ago, which is still in good condition, nothing new being provided except necessary hose, nozzle and packing occasionally. Of course the pump was taken care of, the owner appreciating the fact that the outfit was bought to be used for spraying and not to be allowed to go to the scrap heap through lack of proper care. The hose was not allowed to crack and leak at its point of attachment to the pump, and when put away was laid up on a row of spikes driven into the wall of the tool house to insure against twisting or bending. The outfit was not put away dirty or filled with spray material, but water was pumped through it till cleaned.

The nozzle cap or nozzle was removed and dried after using, being careful to place it where it could be easily found when needed again. It is extremely annoying to have need of unscrewing the nozzle cap when the outfit has been brought out to use after a long rest, and then find that certain parts are the worse for storage. The barrel should also be taken care of and not left to dry up, lose its hoops and become unfit for future use. Washing, painting and storage under proper conditions will insure the long life of the barrel. The working parts of the pump itself must not be neglected and a coating of axle grease will be of value.

Value of Strainer and Gauge

Two additional parts of the equipment, often missed on inspection of a hand spray outfit, are a good wire strainer and a pressure gauge. No matter how clean the water may appear drawn from pond or tank, it will in all likelihood contain small bits of straw, weeds or other material which will clog the nozzle, causing a vexatious loss of time. Then no homemade spray mixture should go into the barrel without being strained to remove particles of impurities in the ingredients. It must also be remembered to wash and brush thoroughly the inside of a new barrel before using it, else little splinters of wood will surely find their troublesome way to the nozzle.

The use of a pressure gauge, even on a barrel outfit, is an essential in intelligent spraying. It is a guide to the man at the pump handle, since on the first day of its use the dial might well indicate by a lower reading the approach of the noon hour. Pressure must be kept up to insure best results and the regular change of the man at the pump handle with the one holding the rod is advisable.

Where a power outfit is used and much ground must necessarily be covered quickly, the use of a spray gun has become quite general. This tool is profitable when in the hands of competent men trained to keep on the move and still do an efficient job covering the tree. The use of the spray gun is wasteful of material and unsatisfactory in disease control where untrained labor is used. In cases where failure in spraying came about from a lack of sufficient spray machinery to protect the fruit properly at the right time, the spray gun fills an important place. It cannot, of course, be used to advantage on a barrel outfit since the pressure is much too low.



If The War Had Continued!

If the war had continued, the pair of U. S. "Protected" rubber boots that you will now be able to buy at your dealer's this winter would have gone to France for one of the boys "over there."

But, as the trenches are empty, there is no need for trench boots; so our Government is now allowing us to provide heavy-service, double-duty U. S. "Protected" rubber footwear for the outdoor worker at home.

Uncle Sam has furnished "our boys" with the best rubber boots that money can buy, and, in both the Army and Navy, there probably are as many U. S. "Protected" rubber boots as all other brands combined.

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Rock Island Plow Co.
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SPRAYING—Protects Your Trees Plants and Vines



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Field Force Pump Co., Dept. B, Elmira, N.Y.

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High and Constant pressure for thoroughly saturating foliage is the secret of success.

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Strainer Cleaners to prevent clogged pipes and nozzles are specialties of the "Osprymo" machine.

They stand up under most severe conditions. Foliage unsprayed breeds insects, scale, fungus, blight. Use a sprayer that covers.

The Junior Leader is simple, safe, satisfactory. Especially advised for orchards and groves.

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New and Old Orchards

By B. R. B. Weber, Nebraska

THE subject of our orchards seems to be pressing on my mind just now, and I am sure it is worthy of an editorial from a better source than this, but if you have not already noticed the old orchards fast passing away, we feel it is our duty to call your attention to the first old one you are passing, and the next, and the next, and so on, and stop and reflect, and ask the question, "Where is our fruit coming from in the near future, if these orchards are not transplanted?"

Providence has seemed to favor us in a way, as perhaps we have never since used our corn for fuel, or sniped our brush along the streams, needed this for fuel. And if you met a fellow going for a load, and he asked you where you got it, the answer was, section 16—or 36, the nearest school section, as there was a law against cutting even a sapling on homesteads (if it was found out) and just now the dead and dying trees are needed to conserve coal and to win the war.

And we were not altogether to blame, as no one then knew the best kinds of fruit trees, or how to take care of them, as we have since learned from our great agricultural colleges. Later, came the pests and fungus canker, etc., then the pruning and spraying and many of the trees were too old before we brought ourselves to believe it was worth the price, even though it would do what everybody knows now to be a fact, and that anyone can have a good orchard and know how to keep it now.

Must Have New Orchards

And we would be to blame if we let the same thing occur again, for we must have new orchards since we know what a portion of Nebraska is an apple state. One of our county agents, who has noticed this, was just talking to me about this very thing; said we ought to get together in some way by a called meeting, or in some meeting that is already called by the county agents, and make an effort to get a large

number of farmers to look this seriously in the face and agree to plant at least a family orchard and care for it in a proper manner from the planting to packing, and have our county agents agree to have someone who knows how to care for them, to keep them posted.

Even while growing, the land will support itself, and when in bearing show them it will be the most profitable land they have, and they will want to try it on a larger scale. At this proposed meeting have the very best equipped man or men to discuss the subject till these agents would get the fever, and in turn call meetings in their counties, of both women and men, to form an orchard party, or club of some kind, that would promote interest in the fruit industry in every portion of the state where it will prove a paying proposition, and we have men that know this, just as they used to know where Milk sick was located (always just across the line). The only difference they always wanted to be out of it, and in this, all want to be in it.

Nebraska and Fruit

And most of the state will produce fruit of some kind, at least for family use, in the years the weather is favorable. If something is not done we will soon be without apples here and prices will be so high most of us will have to do without. Do you know that we have fifty county agents in the state who are anxious to do anything to help make two blades of grass grow where now only one grows. Under the extension service of the State University, besides the officers and supervisors and clerk, this is an army we must use to its capacity. Would it not be the proper thing for the county agents to call a meeting during the State Fair to consider this proposition, or bring it up at some meeting already called? Of course I can only suggest, but if you could see this thing as it is, or as I see it, I am sure some action would be taken.

Peaches—What to Plant

By A. P. Marshall, Canada

A MAN with 100 acres of a single variety of peaches, all coming into bearing at the same time of the year, realizes, when it is too late, how valuable it would be to him if he could spread out his shipping season over a greater period of time.

A fruit so perishable as the peach, cannot be kept, and must be shipped just at the proper time or heavy losses will be incurred. The man who so plants as to have continually ripening varieties of good peaches, from the earliest to the latest, has the best opportunity of marketing his whole crop to advantage.

Of course, if he is so placed that he can readily secure a large number of help for a short time, he may be able to handle an immense quantity of peaches, but most peach growers have found that, with proper varieties, it is possible to handle the crop with from six to a dozen hands, where it would take 50 or more to handle the crop of one variety on the same acreage.

A Good Succession of Peaches

A very successful grower near Niagara Falls, uses the following varieties in succession on 35 acres, and is able to handle the crop with about a dozen people—Greensboro, Admiral Dewey, Yellow St. John, Early Crawford, Fitzgerald, Elberta and Late Crawford. Each variety takes from a week to ten days to clean up, and one dovetails into the other so that the season carries over a considerable period.

By systematizing the selling, and by regular high quality shipments, the same regular customer readily takes his entire crop, merely necessitating the shipment of two cars daily during the busiest season.

When one understands that about 20,000 baskets are handled in a fair season, it can readily be seen what a splendid business arrangement it is to have the period of ripening strung out over at least a couple of months.

Contrast this with the case of another grower having 100 acres of Elbertas, the crop from which ripens completely within a week or ten days. In this case it becomes necessary to obtain every available

assistance, and to rush matters to the very limit to avoid the loss of a great quantity of fruit.

To be sure no single variety could be better than the Elberta on account of its exceptional shipping qualities. Peaches allowed to ripen fully before shipping cannot reach their destination in prime condition, and delay in handling may mean total loss.

Anyone planning a peach orchard should see to it that suitable varieties are selected, in order that the ripening period may be prolonged, so that a regular quantity may be handled by the same help throughout the season of shipping. The work can thus be better directed and the helpers more carefully selected.

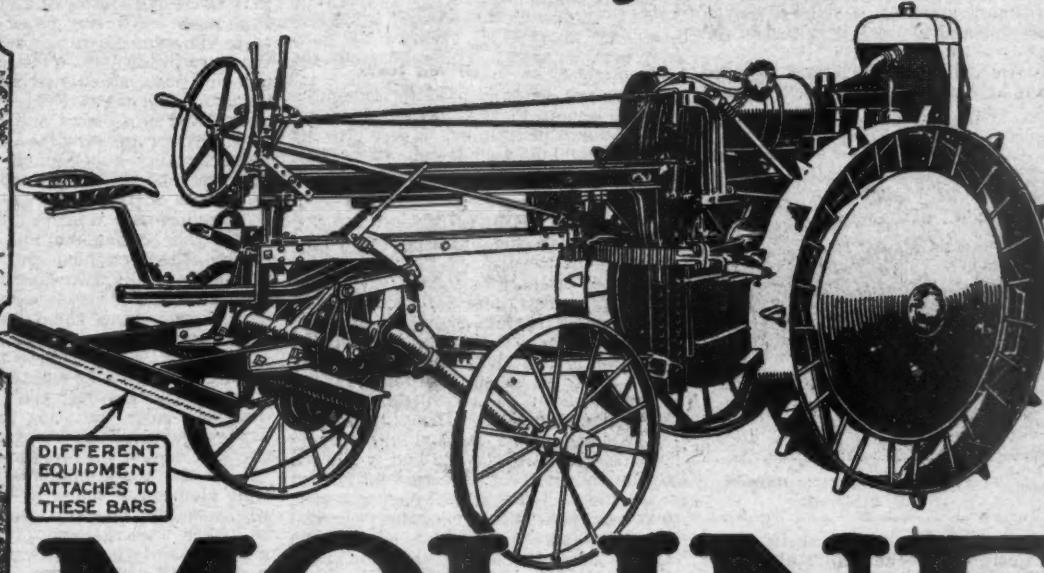
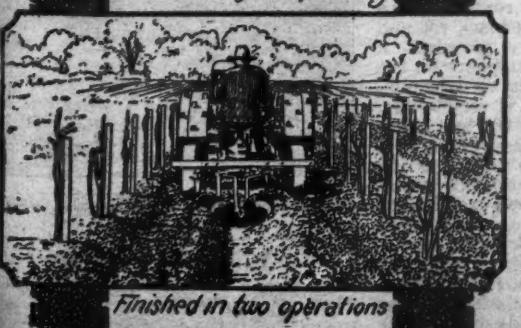
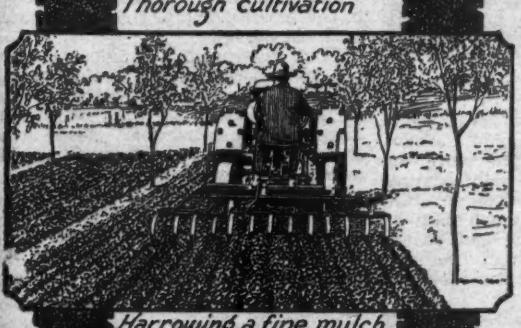
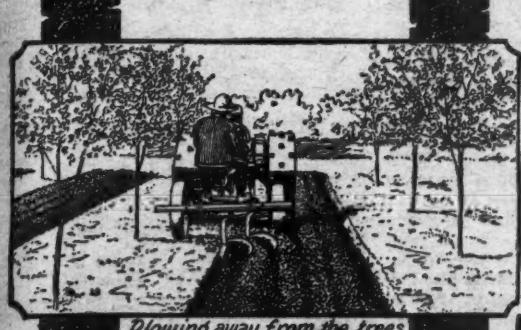
A little thought when planning, should mean more profit when the trees come into bearing.

WHITE PINE BLISTER RUST UNDER CONTROL

In 68 of the 71 localities where outbreaks of the white pine blister rust have been located during the past six years the disease has been completely eradicated through the efforts of the United States Department of Agriculture co-operating with state authorities. In the three remaining localities eradication is going on. So far this season the disease has appeared in only one of the localities where it has been previously eradicated. The blister rust has not been found in states south of Pennsylvania and the Ohio River or west of the Mississippi River, except Minnesota, Iowa and South Dakota. Hundreds of shipments of both pine and currants from infected regions have been made into these states, however, and it is possible that outbreaks may occur. Federal authorities are making a diligent search to locate any such infections and are prepared to stamp the disease out as soon as it appears.

Lightning causes more than \$8,000,000 in losses each year. About 95% of this loss could be prevented by having all buildings properly rodded.

One Tractor and One Implement For All Orchard and Vineyard Work



MOLINE UNIVERSAL TRACTOR and ATTACHOR

With this one outfit the orchardist and vineyardist can do practically all their work and one man can do much more work at less expense than ever before possible.

The Moline-Universal Tractor Attachor is made to work in connection with the Moline-Universal Tractor so that one man has control of both tractor and implement. It consists of an attachor truck equipped with a power lift device and a pair of transverse bars to which can be attached the following equipment: Orchard Gang Plow, Offset Sulky, Straight Sulky, Orchard or Alfalfa Cultivators; Spring Tooth Harrow in two, three or four sections, Furrow Irrigator for orchard or vineyard work, Ridge Irrigator, Vineyard Gang Plow and Crust Breaker.

Thus this one implement does away with all special tools which are used for only a few days out of the year. The Moline-Universal Tractor Attachor combines the main parts of all these machines such as wheels, axle, frame, lifting device, seat and control mechanism. The saving in expense is apparent.

But the improved quality of the work which can be done with the Moline-Universal outfit and the saving in time is of greater importance.

For orchard plowing the gang plow is used and the land is plowed as close as the branches of the trees will permit. Then the Offset Sulky or the Straight Sulky is attached in place of the gang plows and the last furrow or two are plowed out right up to the tree trunks. Plowing can be done away from or to the trees in this manner. After plowing the Orchard, the Cultivator or Spring Tooth

Harrow can be readily attached for making a fine mulch. And if irrigation is practiced, furrows or ridges are quickly made by attaching this equipment.

For vineyard work, Moline-Universal Attachor enables a better quality of work to be done, and quicker and cheaper than ever before possible. The vineyard plow consists of a pair of right and left hand bottoms. These bottoms can be spaced wide apart or close together to suit any vineyard rows from 6 to 10 ft. apart. In two operations, with the bottoms spaced wide and close together, all the land can be completely plowed between the rows. Then by using Spring Tooth Harrow and Furrow Irrigators the entire vineyard work can be finished completely.

The Moline-Universal Tractor is especially well adapted to orchard and vineyard work, being light in weight, extremely powerful. All moving parts are fully protected from dust and many other features which other tractors do not have. Aside from this work it can be used for any farm work, including cultivation of row crops and for belt work.

This Moline outfit will make you more profit. If you are interested in orchard or vineyard work, send for folder R. F. No. 84 which explains in detail just how the Moline-Universal Tractor and Attachor are used.

Manufacturers of Quality Farm Implements Since 1865

Plows, (steel and chilled)	Hay Rakes	Scalers
Harrows	Hay Loaders	Grain Binders
Planters	Hay Stackers	Corn Binders
Cultivators	Grain Drills	Wagons and
Mowers	Lime Sowers	Moline-Universal
	Manure Spreaders	Tractor

Stephens Salient Six Automobiles

Address Dept. No. 82

Moline Plow Company, Moline, Illinois

Amateur Grape Growing in America

By S. J. Bole, Missouri

Part II

The Kinds of Trellis

STAKES are used in California and sometimes in the north. They serve their purpose better in case of the *vinifera* varieties than with the American kinds. However, in hilly regions, along river banks and in the back yard, the staking of vines will always be a necessity. Where stakes are used, a stake is driven at each vine and the vine kept tied to the stake.

The wire trellis has now largely replaced stakes in eastern vineyards. Such a trellis



The Aroma, one of the best late varieties in most sections in the central or northern states

is better than stakes because the fruit has better quality and color and can be better controlled. Durable posts are of oak, cedar, chestnut, osage orange, catalpa, locust or cement. Such posts peeled, seasoned, and dipped in tar or some wood-preserving paint will last 20 years.

Posts should be eight feet long and two and one-half feet deep. There should be only three or four vines between every two posts. As most of the strain comes on the end posts, these should be of larger size, well set and carefully braced.

Number nine or eleven galvanized wire should be used. The wires should pass through holes bored in the end posts and through staples driven into windward side of the intermediate posts. In regions where the wind blows from different directions at different times, the upper wire is put on one side of the posts and the lower wire on the other. A heavy wind will then not blow the vines, wire and all, off the posts, as it sometimes does. The staples should be driven securely into the posts but not far enough to prevent the wires from readily slipping through them.

The wires should be tightened at one of the end posts and kept stretched fairly tight during the summer. White grapes are badly discolored if the wires are slack enough to let the wind whip the vines.

Tying the Canes

At the time the vines are pruned, they are securely tied to the trellis by some material that will not break. After the



The Haymaker. The separate berry is very large and grew on the new cane, a characteristic of this variety

vines have begun to grow, the tendrils will help to hold the vines on the wires. Either light wire or heavy twine is used in tying the heavy trunks. The lighter arms are tied with wool-twine, raffia, corn husks

or basswood, as these seldom strangle the vines and need not be cut.

The tie should be made by wrapping the twine twice around the vine and again tied in a hard knot. This prevents the cane from being injured by rubbing against the wire or stake.

Green rye straw is used for tying the summer shoots in the horizontal or upright systems of training. These growing shoots should be tied loosely to prevent strangling due to their rapid increase in diameter.

Training Grapes

According to the direction the young grape shoots are trained, there are three systems of training as follows: (1) horizontal, (2) upright and (3) drooping. As the drooping system needs no summer training, is easiest to manage and gives the best results, this alone will be described. There are three general methods that are in common use: (1) the single stake, (2) the Kniffen and (3) the Munson methods.

The single stake method has already been described. Only one bud is allowed to grow the first year. This is kept trained to the stake. If weak, the vine is cut back to two or three buds the second year, and the most vigorous of these is left to form the permanent trunk. This is headed back to the top of the stake the second spring. This may be renewed near the top of the stake by means of buds or at the ground in which case from two to four long canes of new wood are trained to the stakes.

The Kniffen Method

The Kniffen method is used more at present than any other. The trellis con-



An arbor or a pergola may greatly aid in beautifying a back yard as well as furnishing shade and fruit

sists of two horizontal wires in the north, and three in case of the *rotundifolia* varieties in the south. The most vigorous shoot is left to grow the first summer and is trained to a stake. This results in a straight, vigorous cane, without a permanent crook near its base. The second spring, the vine is again cut back to two or three buds and the most vigorous of these is again trained to a stake. In the south and often in the north, the vine is trained to one or both wires of the trellis during the second summer.

When the cane is long enough to reach the second wire, it is headed back even with the top wire and tied to the trellis. At the same time all the buds are removed except two or three below and near each wire. As these develop, one is trained in each direction along each of the wires. In the improved Kniffen, the trunk is made to branch somewhere between the ground and the lower wire. One cane for each wire is even better than this.

The divided trunk is gotten the second summer by pinching back the shoot and allowing two of the upper buds to continue to grow. The permanent form is gotten the second or third spring, depending on the vigor of the vine. In the south a small crop is allowed to grow the second year; in the north, a partial crop is produced the third year.

The fruiting wood is secured from either (1) the spurs or (2) long canes on the permanent arms. Of these two methods, the long canes with seven to ten buds on each give the better results.

The old canes may be rejuvenated by permitting a young shoot to develop at or near the ground. This shoot is treated for two years exactly like a new plant during which time the old cane is producing fruit. The old cane is then carefully cut and removed from the trellis.

Plan of Munson Trellis

The Munson trellis is used considerably in the west and southwest and in Michigan. It is made by setting posts every two or three vines and spiking short cross-arms to the top of each post. The cross-arms on the end posts are bolted and braced securely. Small holes are bored through each end of the crosspieces and through each post. Wires are stretched through these holes, making a horizontal trellis. The posts may be set high enough to cultivate crosswise underneath the trellis wires.

The vines are trained at first the same as for the Kniffen method. When high enough, the permanent arm is tied to the middle wire and two long arms are left each year along this middle wire. As the shoots grow from these buds, they are allowed to drape over the two outside wires. The tendrils soon fasten the shoots securely to the trellis and the vines form a canopy of leaves over the top and hang down the sides, imitating the wild grape as it spreads over the top of a tree. Either the spur or long-arm renewal is used.

Like the stake method it shades the fruit almost too much in the north. It works well in the south, where the season is longer and the sun hotter. It also obstructs the wind less, which is a disadvantage in a windy region.

Arbors and Pergolas

On the home grounds, grapes are often planted for their shelter, shade and beauty as well as for their fruit. The pruning here differs somewhat, as the object is to cover a large space with foliage. Weak growing varieties would fail here, as they would on



A cover crop of oats in the late fall

a Munson trellis. The Clinton, Niagara and Concord in the north, and Carman, Fern and Scuppernong in the south, are vigorous growers and especially adapted for arbors and pergolas. The resistant and hardy wild grape is much used on large pergolas where shade and beauty rather than fruit is desired. A male variety may be planted if one wishes to avoid the fruit.

The spur method is used in pruning arbors and pergolas. Longer permanent arms and more wood are left than in case of the trellis. Here, as with the trellis, the permanent trunks and arms may be rejuvenated and renewed whenever necessary.

Sprays and Spraying

In this article no attempt will be given to name or describe the dangerous insects and disease. (For enemies of the grape, the grower should secure Farmers' Bulletin 284 of the United States Department of Agriculture, Washington, D. C.) In most parts of the country, even in case of the home garden, grapes should be sprayed. As San Jose and other scale insects do not injure the grape, dormant contact sprays are not necessary. Where black rot and other fungous diseases are prevalent, a dormant spray of copper-sulphate on the ground, posts and vines is very helpful.

The foliage of the grape is very tender, and weak bordeaux is still the best spray to control the fungous diseases and not injure the leaves. Arsenate of lead is the best poison to use in the bordeaux to control the grape insects. These are both inexpensive and work together well. For sucking insects, black leaf forty is best.

Bordeaux is made in different strengths, but 4-4-50 is the formula in general use at present. To a barrel of bordeaux, one pound of dry or two pounds of the paste form of arsenate of lead is added. Care

should be taken that the arsenate is thoroughly mixed before adding to the bordeaux, otherwise it will settle to the bottom and the spray will fail as an insecticide. The black leaf forty must be used separately and diluted 1000 parts of water to one of the solution.

The Spray Schedule for Grapes

Grapevines should be sprayed from two to five times during the season, varying with the severity of insect and disease troubles, which in turn vary with the sea-



The trailer method of spraying a vineyard with a power sprayer

son and the section of the country. For three sprays, the following is a general schedule which should be modified to suit local conditions:

(1.) Spray with poisoned bordeaux 4-4-50 when the young shoots are about a foot in length.

(2.) Spray with poisoned bordeaux just before the vines bloom. Molasses may be added.

(3.) Spray with poisoned bordeaux three weeks later than 2.

Spraying Apparatus

A good barrel pump with 30 to 40 feet of hose, extension rod and nozzle, is highly satisfactory for a small vineyard. An extension rod eight feet in length, and a angle nozzle should be used. The power should be kept high enough to give a mist-like spray. It is always well to have a pressure gauge attached to the pump to maintain a uniform pressure. Both sides of the leaves should be thoroughly covered with the spray.

For a vineyard of several acres, a power sprayer is necessary. Where a grower has orchards, the orchard power sprayer may be fitted up with temporary rods and nozzles for the vineyard work. There are also light power sprayers where one has a vineyard and no orchard. Such a spray rig usually has three or four nozzles for each side of each row; one pointing downward from above, the other pointing upward from below, and one or two pointing at the side of the row.



Spraying grapes with a barrel sprayer mounted on a spring wagon

When to Pick Grapes

Pears and apples are generally picked when more or less green and allowed to ripen either in the cellar, storage or transit. Grapes do not ripen off the vines in this

for January, 1919

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way and so to be of the desired quality must not be picked until fully ripe. Jelly is about the only thing for which partly ripened grapes are really fit to use.

Grapes should be picked when dry, and always placed in dry packages. Baskets filled with the fruit should never be left out-of-doors after night, and should be kept in the shade of the row and covered with a canvas cover when on the wagon.

Equipment for Picking

The necessary equipment for picking consists of a pair of grape shears, picking stand and packages. The shears or pickers



The plants are trained to a stake during the first summer

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co-operated for selling and shipping. Such commercial regions are located in the Missouri Valley, southern Michigan, northern Ohio and in New York and Pennsylvania. In these regions, hundreds of growers either sell to a wine plant, a grape juice factory or co-operate and hire a manager to handle the selling and shipping for the association. Most of the grapes shipped in this way are packed in refrigerator cars under ice and many of them are sent long distances.

Hundreds of acres are shipped each year from St. Joseph and Benton Harbor, Mich., across the end of the lake to Chicago, and across the lake to Milwaukee. This is an ideal method of shipping as the rates are cheap, the trip is made during the night, and refrigeration is not needed.

In recent years, motor trucks and trailers have been much used in the marketing of grapes. It is a very common thing to see large trucks come into the Buffalo wholesale district in the early morning with grapes grown sixty miles from the city.

Costs and Profits

This is a time of advancing prices and also a time when the value of money is changing. War conditions have influenced these things, and it is difficult to tell whether or not the advanced prices will hold in the future. It is the writer's opinion that prices, especially of fruit, will never go back to the level where they were before the war. One reason for this is that the marketing of fruit is rapidly passing into the hands of expert selling agencies.

A few of these large agencies, like the North American Fruit Exchange, can control the prices. Associations of growers and selling agencies, however, by their ideal distribution of fruits, standardization of packages, and quality of produce, are revolutionizing the fruit growing business. The writer, to illustrate this point, would much prefer a box of fancy Grimes wrapped and carefully packed, to a bushel of wormy wind falls covered with seab and bitter rot, even when the former cost \$3.60 and the latter \$1.50.

That these prices may be lowered somewhat, and that the standards may be still further raised, the government will, no doubt, take over or in some way regulate the marketing of fruits in the near future. In a certain sense, there is just as much excuse for having three express offices and parcel post in a city, as for having competing selling agencies, with a duplication of offices and salesmen, in all the large cities.

The reader may wonder what all this has to do with the small grower of grapes. It has very much to do with such a grower's success, for it insures a good price and demands a good product. The time is fast passing away when the farmer will permit his fence rows to grow up to underbrush, or when he will allow his binder, mower, plow and harrow to warp and rust under the shade trees. The time is also fast passing away when, in either a big or small way, men shall attempt to grow fruit who lack the knowledge or desire to cultivate carefully, prune and spray their vines, trees or bushes.

Wine and Grape Growing

This article would not be complete at this time without a brief mention of the wine industry in its relation to the future of grape growing. Many large growers in California and in the east, have felt that viticulture would be doomed, should the use and manufacture of wine be prohibited. Within a very few months, and before the wine men, themselves, realize it, national prohibition will have become a fact. Instead of forcing grape growing out, the chances are that the opportunities for the grower will be increased rather than otherwise.

When men fully realize that grapes may be used in a hundred ways as food, and when wine sets one's blood on fire only to waste accumulated energy for the time being, they will see nothing but good coming from prohibition of wine. True it is, that certain varieties of wine grapes like the Zinfandel, Norton and Catawba will have to be either replaced by, or grafted to, other varieties. So far as the writer is able to see, the future is full of promise for the real fruit grower, and one who grows fruit either for fun or money should surely grow his quota of grapes.

It is labor that renders rest delightful and sleep sweet and undisturbed.

A propensity to hope and joy is real riches; one to fear and sorrow, real poverty.

Prize Winners in Tractor Contest

First Prize Letter—\$10.00

By ARNO WITTICH, WISCONSIN

I am hereby making use of the opportunity presented in your November issue of telling about our experiences with a 10-18 Allis-Chalmers tractor. My case may be particularly interesting to readers of the AMERICAN FRUIT GROWER because of the fact that the land I have been working is wholly orchard land and consists of 110 acres of cherry orchard and 100 acres of apple orchard.

To begin with, I must say that the tractor has been the means through which our cherry orchards were saved from total destruction by the persistent ravages of the shot-hole fungus. For the successful control of this cherry pest, a combination of timely sprays and thorough cultivation is absolutely essential.

Up to the beginning of the past season our equipment had been very limited and we were forced to depend on neighboring farmers to help us with the much needed cultivation. This extra help usually was not forthcoming when it was most needed for our work. There was only one alternative left us and that was the purchase of a tractor and the necessary soiling tools. Of the latter we purchased two, an eight-foot double cutaway disk and a ten-foot Forkner springtooth harrow.

As soon as the soil became firm enough in the spring to permit the use of a tractor in the orchards, we began our work with the double disks. The drawbar of the tractor was set about fifteen inches off center so as to bring the disks close to the trees and at the same time to keep the tractor at a safe distance from the trees to prevent bruising of limbs and brushing off of fruit buds. To further lessen the possibilities of injuries to the trees a galvanized iron guard was made to fit over the outside of the drivewheel. Only one of these guards was necessary as we operated the tractor with the same side always next to the tree row except in first and last rounds as shown in diagram:

Our method of driving is clearly shown in this diagram. As our tractor turns a little more readily to the right than to the left (on account of the three-wheeled construction and the offset draft) we drive along the right side of the tree row and in turning pass one or two tree rows and go back along the right side of the next row. In orchard work, where one of the greatest factors is that of time, the method of driving must be well planned so that no time is wasted in turning and so that some of the ground on the ends is not gone over unnecessarily often.

During each cultivation we work our orchards both ways thus insuring the turning under of all infected leaves or trash and preventing the growth of grass or weeds in any of the tree rows.

Working in this way, under favorable weather conditions, we cover twenty acres in a day one way, or ten acres both ways; and use on the average fifteen gallons (ranging from about 12 to 20 gals.) of gasoline per day, depending on the firmness of the soil and the topography. At times, when we have been greatly delayed by wet weather, we make up for lost time

by keeping the machine going from early morning till dark with only short stops for replenishing fuel and changing operators. Of course delays may also be caused by breakdowns or engine trouble.

At the beginning of the past season we experienced much trouble in starting the engine in the morning. After warming up the gasoline in the priming can in hot water and heating the spark plugs, we would get the engine started and from then on would have no further trouble. I found that the magneto was defective and did not deliver a hot enough spark for starting. I therefore called up the Allis-Chalmers

spokes of the drivewheel, bending several spokes and breaking out the side of the bull pinion. I phoned for the repair part on Friday, received same by express on Saturday, and had it in place by Sunday noon and all ready for work Monday morning.

If any of the readers find that they must work their tractors under similar conditions I would advise them personally to give the machine a thorough looking over at least every two days, or oftener if possible.

After our orchards had been worked up with the double disks we used the Fork-

a combination sprayer-tractor, which when perfected will further orchard operations greatly, besides putting the tractor under still another yoke. It will then make possible orcharding without a horse.

I think I have now covered the main points brought to my attention in our work with the tractor during the past year. Should there be any questions that readers of your paper would like to have answered in this connection, or any points I have mentioned made clearer, I will be glad to hear from them. I will also be glad to receive pointers from other orchard men that are operating tractors.

Second Prize Letter—\$5.00

By FRANK N. FARNSWORTH, OHIO

As the AMERICAN FRUIT GROWER is read by both the leading fruit growers and the leading farmers, this article is written from the standpoint of each.

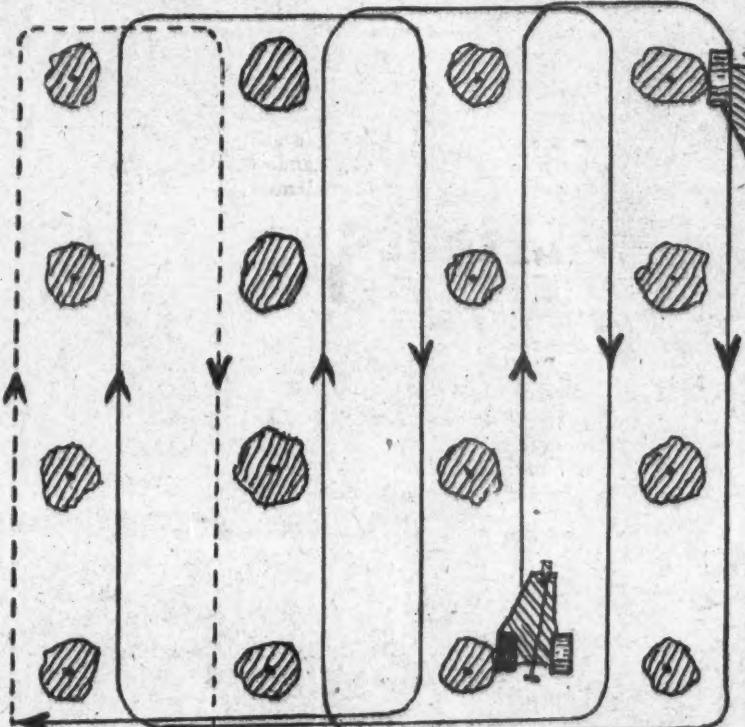
Much of the hardest work of orchard and of farm cultivation comes during the hottest months of the year, when horse labor is at its lowest efficiency. It was this fact which induced us to seriously consider the tractor proposition in order that we might lighten the horse work when it became the heaviest, thereby leaving them free for the lighter work at this season of the year, at the same time doing the orchard and farm work on schedule time.

We carefully investigated the merits of some twenty-five tractors, seeing fully half of them in western, and northwestern cities, and visiting several tractor demonstrations. As our work consisted mainly of orchard cultivation, the machine was purchased which would clear the trees when running through the center of the row, or run fairly close to the trees.

The tractor was of the three-wheel type, differing in appearance from the regular farm tractor of that make in that there was but one front wheel for guiding, in place of the two of the farm type. This three-wheel type had been experimented with in California orchards and was named the "orchard special" of that state. The chief feature of this machine, however, was that it was provided with a brake band operating on the driving mechanism of each rear wheel. The driver could, by foot pressure on the foot pedal of either band, throw that wheel out of drive, thus turning on a pivot in a very short radius at the end of a row or elsewhere. The theory of this plan was good, but in practice it wore out the driving mechanism pretty rapidly. Possibly this was due to lack of lightening the draft before turning. Curved disc levers within the tractor operator's easy reach would greatly facilitate tractor discing.

The tractor did nice work for about three days, when a heated bearing caused the babbitt to flow into an oil channel leading to one of the main bearings. The

Continued on page 32



Showing Method of Plowing an Orchard with a Tractor

people (some 250 miles distance) and had them send a new magneto, the latter arriving about a day later. When this was in place our starting troubles were at an end. As the old magneto had proven defective from the start, we were given almost full credit on a new one.

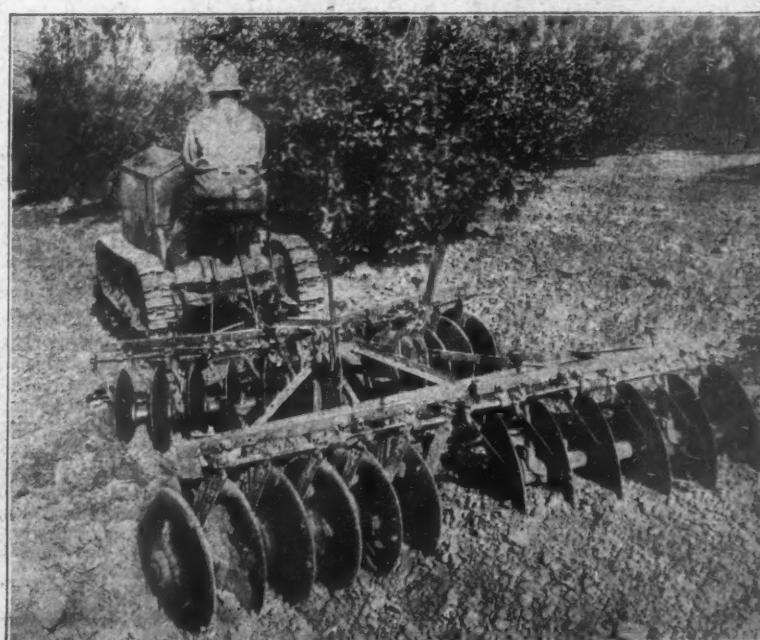
The only bad breakdown that we had during the year was in the bull pinion. I had a high school lad operating my tractor as I had to attend to other orchard operations at the time. This lad was a good mechanic for his age and was eager to learn, but was inexperienced with tractor engines. As a result of his not giving the entire machine a careful looking over before starting it each morning and noon, he had not noticed that one of the pins in the bull pinion had become worn and was allowing the roller shaft to slide out. While running one day, therefore, this shaft came out a little too far and struck the

ner harrow and set the levers of same down as far as possible. When set in this manner the implement is a hard drag for four horses and surely does the work of tearing out quack roots and other noxious weeds, besides leaving a fine dust mulch on the surface of the soil.

As our land is too rocky for plowing with gang-plows, our tractor would be idle for a good share of the year but for odd jobs that we do for ourselves and neighbors, such as sawing wood, road grading, pulling stumps and stones, and filling silos. Besides such odd jobs, several attempts are being made in this county at building



An Avery Tractor Hauling Three Wagons of Coal



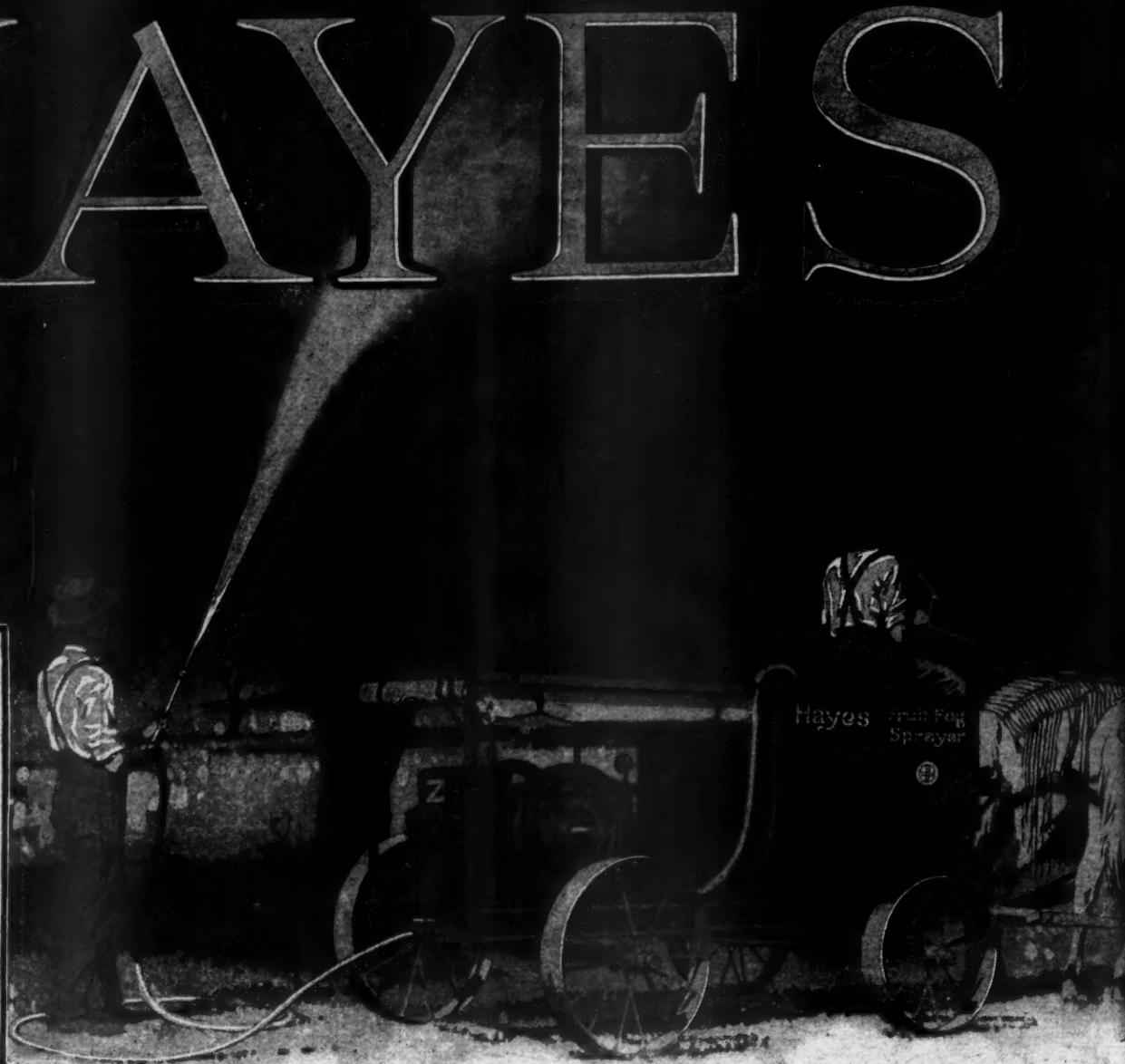
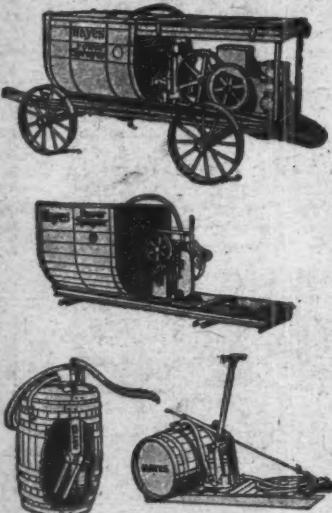
The Cleveland Tractor Pulling a 6-foot Double-Disc Harrow.

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Ask Mr. Favor

Mr. E. H. Favor, head of our Horticultural Department, is a nationally known expert on fruit raising and spraying. For many years he was the editor of one of our leading fruit journals. He was also associated with two state experimental departments, engaged upon important scientific work.

Mr. Favor's experience and knowledge are at the disposal of any person interested in spraying. This does not mean users of Hayes Apparatus alone. It means you no matter where you live or what apparatus you use.

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Prize Winners in Tractor Contest

Continued from page 29

resulting stoppage of oil to that bearing of course soon permitted the friction heat to burn out the bearing. Nearness to the dealer, together with their good service, put the engine in shape to run within a day, but not without a repair bill which made us resolve to prevent the recurrence of this experience. Nevertheless, watch as we would, the experience repeated itself later. Other troubles were, loosening of the set-screw holding the spark retard lever, thus making it impossible to control spark, which caused a mysterious knocking; wearing of exposed cone clutch required new clutch lining; wearing of exposed small pinion gear on each side required their renewal. The above incidents occurred in the first season's use of about thirty days, mostly at drawbar work, on either a disc or a plow. The ten-foot rigid frame engine disc put a fine dust mulch on a large area of orchard or field in a day. The engine delivered satisfactory power when the disc lever was set in the third notch, excepting when a grade, or sand knoll was crossed, which required setting lever in second notch. The tree-bottom, fourteen-inch plow proved too much at seven inches deep, requiring the removal of one plow bottom.

The engine's valves heated badly, causing their stems to stick and break. To remedy this we installed a set of new cylinders (the engine being a twin cylinder, horizontal, cast enblock). Water jackets about the valve cages of the new cylinders cooled the valves, enabling them to work properly without heating.

The second season's use of the tractor, consisting of about the same amount of work as the first season, resulted in the renewal of jackshaft gear; both large, and small drive gears on each side; one new piston; two new fan belts; radiator soldering; new water pump; new crank shaft; and a renewal of the perpendicular shaft of front wheel fork, as well as new axle for front wheel.

In making these repairs we noticed several items which the purchaser will do well to notice before deciding upon his tractor. The bearings were of the ordinary babbitt type set into cast supports, with no chance for adjustment other than re-babbitting, and with little regard as to their alignment with the balance of the engine.

The clutch shifted by means of a foot lever whose action changed direction five times in reaching the clutch. The ignition was of low-tension type, using dry cells and causing very uncertain starting. This made it often advisable to leave the engine running during the noon hour rather than risk its failure to start after dinner.

This tractor, rated at 12-24, ran fairly successfully an eighteen-inch ensilage cutter of heavy draft, blowing the silage into a thirty-foot silo. However, the corn was not tied in bundles and it was fed slowly and evenly into the cutter.

During the season of 1917 we disposed of our tractor and did our work with horses, hiring the belt work done, and studied the situation very carefully awaiting more tractor developments. Past experience had shown that the need was for a compact, accessible, enclosed tractor of rather light weight.

Early in the spring of 1918 we purchased a four-wheel, four-cylinder tractor having a castiron boilerlike crankcase and transmission case bolted together at the center, forming the tractor's frame, at the same time compactly and sturdily enclosing and uniting the engine with the transmission in a dust-proof housing. The absence of the usual frame about the heart of the tractor, renders repairing and adjustments made as easily as one would work at a workbench.

This machine is rated at 11-22, and does the work which the first tractor did at the drawbar, belt work not having been done with it as yet. The ball and roller bearings deliver a much greater percentage of the engine power to the drawbar than do the old-time power-absorbing babbitt bearings, and the four-cylinder motor furnishes an even, steady pull just as does the modern automobile.

The guiding mechanism of the first tractor required much turning of the steering wheel, as does the steam threshing engine, while the present tractor is operated by a slight turn of the wheel, as is the modern automobile. The advantage of

this feature is readily seen, especially in the close cultivation of the orchard or of farm crops.

This tractor has done as much work this season as the other one did in the two seasons, and the following constitute the items of repair on the present machine: defective valve (replaced by the manufacturer), fan belt and pulley for same, eight piston rings, timer, and two spark plugs. These parts, together with their installation, cost less than one-tenth the cost of the necessary parts and their installation on the first machine. There are several reasons for this. The present tractor is being made in far greater numbers than was the first one, the parts are much simpler, and their service depots stock these parts in practically every community so that they may be reached with little delay or expense. This item is of the utmost importance in the selection of any farm machine, and certainly the tractor is no exception.

We cut down the width of the above-mentioned engine disc from ten feet to eight feet, giving it the desirable width for either of the tractors which we have used. The tractor now being used, handles the disc very well in the third notch, except on a grade in deep sand when the lever is put in the second notch till the knoll is passed, then slipped over to the third notch again. The engine does not stall in these cases but the drivers slip, which could doubtless be remedied by extension rims on driving wheels if the need was frequent enough to warrant their use.

Ordinarily, the twelve-inch face of the drivers is sufficient, so that with their three-inch angle-iron cleats they have ample traction. There are instances, however, where any round-wheel tractor will slip, giving the operator that shaky feeling which makes him wish that he were on a tracklaying machine till he gets out of the soft place. In this connection permit me to say that, while the writer has had no experience with tracklaying tractors, the experience with our tractor which had exposed gearing made it quite evident that in sandy soil there would be a great wear on the tracklaying device, situated so near the ground that dust will work into the machinery unless usually thorough precautions are taken in their construction. There are instances where the soil texture requires a larger bearing surface than the round-wheel furnishes. In this case the tracklaying machine appears to be the logical solution.

Orchards and farm tractors are on the market today whose performance shows that they have become practical, dependable power for drawbar work as well as for belt work. We, as men, do not like to be judged as incapable until we are given an honest tryout; an opportunity to reach our highest efficiency. In the same manner, it seems only fair to give the tractor a thorough tryout before condemning the machine. This often includes more than one would think. Having the tractor in shape to deliver its full horse power at the drawbar (plus a little reserve power if it has been conservatively rated by its manufacturer) it must be so-hitched to its implement as to make a direct line of draft. If we are using horse-drawn implements with the tractor, the hitch must almost invariably be changed. The same is true in using tractors of different makes.

These matters being properly arranged and the operator ready to start, let him remember that the contents of one oil can, rightly used, will save the expense of many a dollar for wornout machinery, and in this same connection, that a few minutes spent with wrench in hand, looking over the outfit and tightening up nuts before starting the run, will save expensive and annoying delays.

Our best teamsters are the ones who take pride in their horses, and consequently they work with them to secure the best possible results. The well-kept engine responds to conscientious treatment in very much the same manner, and the satisfaction, not to mention the added service returned by the tractor, well repays this consideration.

With the present-day achievements of tractor manufacturers, together with the useful information in our farm-power papers, it becomes no longer a question of the tractor's usefulness largely to replace horses, but it consists in the selection of the proper tractor, the planning of the season's program so as to use the tractor largely in the cultivation, and other hard, lugging work, and the thoughtful operation of the machine to carry

out the efficiency of the tractor program.

As the manufacturer is ever alert for practical, labor-saving machinery to make production both pleasanter and less expensive, so may we, in the business of producing more and better products, seriously consider the modern tractor to solve the heaviest problem of cultivation, namely that the dependable and economical power.

Third Prize Letter—\$3.00

R. B. NORTHRUP, OREGON

Before purchasing a tractor last spring, I gave the matter careful consideration in regard to adaptability to work, initial cost and cost of operation, and time and labor saved. In the first place, we have a heavy, sticky soil, which packs quite easily. In order to get sufficient power from a two, three or four-wheeled tractor to pull a gang of plows in this heavy, sticky soil, one would need to have a very heavy tractor which would pack the soil too much. As my work was mostly orchard work, I wanted a tractor that would plow and cultivate up close to the trees, work in loose soil as well as uncultivated ground, and travel up or down hill or over irrigation ditches. The caterpillar type of tractor, or tracklayer as it is commonly called, seemed to be the best to meet these various needs. It will travel over irrigation ditches, or haul a heavy load over rough or loose ground easier than the wheeled type of tractor. The tracklayers may cost a little more for the same horse power than the wheeled tractors, but it is poor economy to buy something which is not adapted to conditions under which it has to work even though it may cost less.

A very important item to consider in buying a tractor is the initial cost and the cost of operation. After looking over various makes of caterpillar tractors, I decided that for the money invested and the work required, the Cleveland Tractor was the best for the small farmer with ordinary means. It is simple of construction and easy of operation. Any man or woman of ordinary intelligence can operate it. Without previous experience, I plowed from three to five acres of this heavy, sticky soil in ten hours, at a cost of about three dollars a day for fuel, oil and grease. I have also harrowed from twenty to thirty acres in ten hours and double-disked from twelve to fourteen acres in the same amount of time. Whenever repairs are needed, they are not as costly as for a larger machine, and are easily obtained. Of course I have had some troubles with the Cleveland Tractor, but these troubles are eliminated in the newer model. We must expect some breakages with all machinery, and it is advisable during the busy season to keep some extras on hand for those parts that wear the most.

Some of the old settlers here argue that with horses they can plow more ground the year around than we can with a tractor. That may be true in the sense that they will plow, or rather stir the ground, when it is too wet to work any tractor to advantage. That is just the time that they should stay off the land. With a tractor the ground can be plowed just when it is ready, plowing night and day if necessary. It never gets tired, and eats as it works. With the aid of the tractor, I can now plow my land when it should be plowed, at the same time doing a better job. Also I can conserve more moisture after irrigating or after a rain, by being able to cultivate more ground in twenty-four hours. That saving in time means a saving in help. I now can do the work alone which would ordinarily require one or two extra men, besides I have considerable time to do custom work for my neighbors. Within the last eight months, except for four days when I hired a team, I have plowed and cultivated forty acres of orchard at home and have received \$720.00 for custom work done away from home. The fuel, oil, grease, repairs and insurance on the tractor cost \$350.00 for the eight months, which leaves a profit of \$370.00 besides paying for the expense of plowing and cultivating the forty acres of orchard. In addition to this, my time saved in plowing the forty acres with a tractor instead of horses, pays for the interest on the money invested in the tractor.

To sum up, let me say this to any prospective purchasers. First select the type of tractor that is best adapted to the work required to be done. Then pick out the individual make from that type which meets your individual requirements. Do not expect to get a machine that will work

American Fruit Gro

successfully day after day without grooming. With proper care a good tractor will soon pay for itself.

Fourth Prize Letter—\$2.00

BY WALTER A. ERNST, INDIANA

In as few words as possible I shall tell you of my experience with a tractor on the College grounds.

This tractor is an Avery, 12-25, which of course, means that it develops twelve horse power at the drawbar and twenty-five h. p. on the belt. It was bought in the fall of 1917, and, as I was rather busy at that time, the agency for the Avery did most of the fall plowing. And, as didn't he rip up the farm! It was a joy to look out across the country and see furrows nearly as far as the eye could reach. On this soil, a black, sandy loam, this machine pulls four bottoms and easily averages eight and ten acres a day.

After the fall plowing the tractor finished power for shredding corn (corn in might handy as corn had been caught in the early frost and hay otherwise scarce and grinding oats and corn for all stock. But it was last summer especially that the iron horse proved a boon. The government had urged all to put in their supply of coal during the summer months. In this place we use about forty carloads a year, forty and fifty tons to the car. This must be hauled one and one-half miles which means an enormous expenditure of man and horse power. The tractor was put on the job and it did its work nobly. With lugs removed it was still able to draw four or five wagons holding from two to one-half to three tons each. Four, and sometimes five, trips a day were made. This released eight to ten horses and the hands, enabling us to put out the large acreage of corn ever put out on this place and it was given proper and plenty of cultivation. This fall the tractor is again doing the fall plowing, releasing teams and hands for corn husking.

Besides the foregoing, the tractor has been used for harrowing and disking, especially for oats, hauling logs to sawmills, running the ensilage cutter, shelling corn, running a gristmill and grinding apples. It will be used for threshing as soon as we get our thresher.

But now will say that handling a machine of this size and capacity is a man's job. A few farmerettes might get away with the operation of a tractor of this size, but they are few and far between. It requires some mechanical ability, and it takes considerable muscle to shift from low to high gear. I dare say, though, the most farmer boys of today who take an interest in their work are soon able to operate them.

Regarding expense, will let every one figure it for himself. Pulling four bottoms (this is its limit) the tractor will consume about two gallons of kerosene per hour. At present price for oil, this means about twenty-five cents an hour; cheap enough, considering that it is doing the work of ten horses and three men. For shredding, cutting ensilage, etc., if run to full capacity, it will consume nearly as much fuel when plowing.

Repairs were very few this, its first year. Two small cog wheels, costing about eight dollars each, and clutch lining costing two dollars, replaced twice, were about the limit for repairs. Repairs will probably be greater the coming year.

For us the tractor has come to stay, forever and above what I have already said, there is the advantage of doing our work when we are ready. Regarding the average farmer, I do not like to advise. It seems to me, though, that the man who has more land than he can take care of with three horses, a tractor would mean a gain and a saving, provided it is adapted for his purposes and one to which it can be run, for then you can keep busy.

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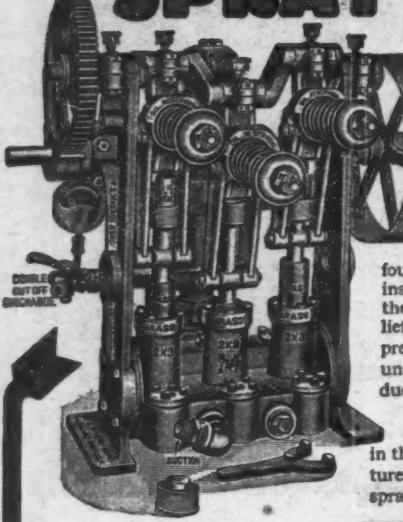
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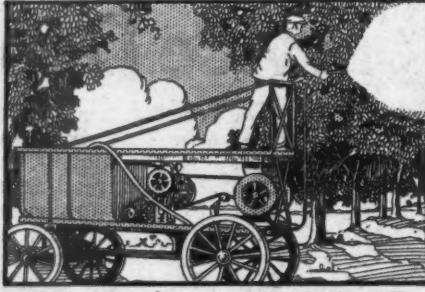


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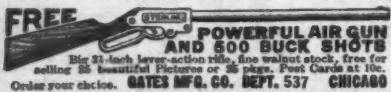
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A Cherry Border

By Lewis Hillara, Kansas

About the most satisfactory row of trees I ever grew was a border to a two-acre garden. The variety was the Morello cherry, and they were on their own roots. They were from sprouts taken up. This was not the satisfactory part about it though. I would not advise the planting of seedlings or sprouts, for these will not produce as fine fruit, and then the sprouts are a nuisance under most conditions. They did not bother us much, for this row was not cultivated and the sprouts did not grow very thick. They were easily kept down by mowing. If the roots had been cut by plowing, probably we would have had another story to tell.

The cherry, as we now have it, of the semi-dwarf nature from the stock used, is an ideal tree for using around gardens or anywhere as a bordering row. These trees do not sprout at all, and they can be cultivated freely. The cherries are larger than the native Morello and I believe they are equally fruitful, though I never saw trees better filled and more sure to bear every year than that row of mine.

My trees were given a light mulch of manure every year to keep the soil loose and keep up the fertility. They should have had some wood ashes applied also, and would have been better probably for some bone meal, but they were on high ground, and on a western prairie where prairie grass had been burned each year for many years before it was brought under cultivation, and these elements were more abundant than in older soils.

I do not think there is one fruit that is more certain to bear a crop than the cherry, and none that sells better. The plum is a good second on the market, but it has more insect enemies, and does not bear as surely. We never had any trouble selling all the cherries we had at a good price. Since that I have had cherries, and have had direct knowledge of several others who grew them in gardens, and in every case they have made good. A friend of mine sold between eight and ten dollars' worth of fruit from one tree, and it was not a large one. Another friend had a little more than half of four lots planted to cherries and sold \$150 worth from it one year, at thirty cents a gallon.

There are three main varieties, and it will be best for the grower to select to suit the market and the locality. One of the very finest sorts is the Montmorency, but it does not bear as freely as the other two in many places. Early Richmond is early, and is picked with the stems on mostly, as it picks thus naturally. It finds a good market. The main crop sort for canning is the Morello and its near relatives. It is a black cherry, and is usually picked without the stems for home marketing.

AUSTRALIAN FRUIT NOTES

From the Australian Fruit World, we learn that five years of experiments in the keeping qualities of apples in cold storage, prove that much depends upon both the grower and the storage.

The four main points to emphasize, after proper orchard practices have been carried out by the grower, are: 1st, picking at proper maturity; 2d, care in all handling operations; 3d, prompt storage; 4th, a proper storage temperature.

An enormous increase in scald was noted in immature apples over mature apples in storage. Over-mature apples also showed up badly in comparison with apples stored in the right stage of maturity. Special attention is called to the disastrous effect in storage of even the smallest injury to the fruit resulting from rough handling. Immediate storage showed a great advantage over delayed storage. Scald in storage was very largely increased by delay in this matter. Proper storage temperatures were indicated to be from 31% to 32% for most varieties in long storage.

The results of five years' experiments in thinning, indicate as a whole that it does not pay to thin in years of light crop production if the trees are vigorous and growing in fertile soil. Where apple trees are bearing from a medium to a heavy crop of fruit, the removal of a part of this fruit by thinning is a very profitable practice. Thinning increases the size and improves the quality, thus enhancing the market value of the fruit. There is no indication that thinning influences subsequent crops nor causes trees, naturally biennial in bearing habit, to bear a crop each year.

American Fruit Grower

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Fits: Ford, Studebaker, Overland, Reo, Dodge, Hudson, Buick & others.

Furnishes plenty of power for filling silo, running shredders, grinding feed, sawing wood, etc.

Get one NOW—hundreds in use—Satisfaction guaranteed—only \$35.00

Write for Circular 400

LAWRENCE AUTO POWER EQUIPMENT Minnesota Street, St. Paul, Minn.

LAWRENCE AUTO POWER CO.

World's Best Roofing Freight Paid

"Reo" Closter Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Positively greatest offer ever made. We Pay the Freight.

Edwards "Reo" Metal Shingles cost less; outlast three ordinary roofs. No painting or repairs. Guaranteed rot, fire, rust, lightning proof.

Free Roofing Book

Send for our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 154.

LOW PRICED GARAGES Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing prices.

THE EDWARDS MFG. CO. 104-154 Pike St., Cincinnati, Ohio.

FREE Samples & Roofing Book

Heat and Cook with Oil Oliver Oil-Gas Burners Fit Any Stove

Attach to your stove, fill the tank with kerosene or coal oil and it's ready for use.

Economical. Cooks and bakes better than coal or wood. Gives more heat.

Turns on and off like gas. No fires to start. No kindling, ashes, coal or wood.

Saves hours of work daily. Absolutely safe. Write for FREE literature. Agents wanted.

OLIVER OIL-GAS BURNER & MACHINE CO. 104 North Broadway, St. Louis, Mo.

Solves the Coal Problem

Kindly Mention American Fruit Grower when Writing to Advertisers

One Thousand Home Orchards

THE state agricultural extension force of Mississippi devoted the first week in December to getting planted out over the state the largest possible number of model home orchards. This campaign was under personal supervision of E. F. White, extension horticulturist, and had the support of nearly 200 county, district and state agents of the men and women federal demonstration force. The men county agents pledged themselves to plant at least one model home orchard in each supervisor's district. This means about 400 orchards in the state and it will further mean that these orchards are located in every nook and corner of the state.

The women county agents have pledged that all their four-year or certificate club girls, and all their prize winning girls will plant their club plots to orchard fruits. This means about 300 more orchards. In addition to the 700 orchards put out under this organized plan, with the aid of the extension specialists, the principals and agriculturists of the A. H. S., and the other educational forces of the state, hope to plant out an additional 300 orchards. So the goal has been set for 1,000 home orchards for Mississippi this season.

CAMPAIGN FOR HOME ORCHARDS

The State Horticultural Society, the State Horticulturist and the Department of Horticulture of the University are laying plans for a home orchard campaign. The experimental stage in orchard growing has passed. It is now known what varieties are best suited to Nebraska. Some varieties have greater disease resistant power than others. Considerable knowledge of disease control has been gathered. In the last five years hundreds of home orchards have died in the State, through lack of moisture and through neglect. To replace these orchards with varieties of fruit best adapted to this State will be the object of the campaign. The Department of Horticulture of the University is planning two bulletins as a part of the campaign. One will set forth specific suggestions for arranging and planting a home orchard. Another will suggest Nebraska varieties and tell how to care for fruit trees.

GOOSEBERRY VARIETIES FOR GARDEN CULTURE

The gooseberry, sometimes regarded as a neglected fruit, has had a large demand during the past season due to the fact that cherries, berries and other small fruits were scarce and high in price, according to horticulturists at the Ohio Experiment Station.

The demand for gooseberries has led station officials to test out a number of varieties for garden growing, the following being recommended and described as profitable: With the American varieties the Downing, Red Jacket and Carrie stand out as being most desirable. The Downing produces large green berries; its bushes are of good size and the variety is productive. The Red Jacket is similar to the Downing with reddish berries but fewer canes in the bushes. The branches of the Carrie are long, loaded with berries and easy to pick.

The English varieties of gooseberries are found to be susceptible to mildew, but the Whitesmith and Keepsake are two of the most resistant. The former produces very large, whitish-green berries; it is productive and the fruit excellent for eating out of the hand. The Keepsake has very large, dark red berries; it is equal in productivity to the Whitesmith.

CEREAL SONG

I'm just a tiny grain of wheat,
They put me in the ground;
I have no hands, I have no feet,
No ears to hear a sound.

I think they say I have an eye,
Although I cannot see;
They thought that I would surely die
Till rain came down on me.

And then I opened wide mine eye,
And to the surface came;
Likewise, also, my cousin rye,
I think he did the same. *

And then when summer came around
And I began to spread,
I covered nearly all the ground
And reared myself a head.

And now I say, beyond a doubt,
I am the standard bread;
I'm shipped to nations all about,
For they must all be fed.

—By J. W. Jackson, West Virginia.

SPECIAL MESSAGE TO BOYS AND GIRLS!

*We are now organizing in all
parts of the country*

Junior American Fruit Grower Clubs

OPEN TO BOYS AND GIRLS FROM 10 TO 18 YEARS OF AGE

Send Your Application Today

The object of the JUNIOR AMERICAN FRUIT GROWER CLUBS, is to place fruit in every American home at all seasons. There is not enough fruit to meet the demand, and prices are getting much higher each year. This is natural as very few fruit trees have been planted during the past eight years. Many orchards die each year from neglect or old age. With the great increase in population in the United States, there are many more people here to eat fruit, and less fruit than before to supply them. It is certainly the right time to start raising fruit, whether you select tree fruits, as apples, peaches, cherries, oranges, grapefruit, etc., or some of the small fruits as strawberries, raspberries, grapes, etc.

The boys and girls who join these clubs can raise fruit for sale and for home use. Doctors tell us that they are constantly more firmly convinced of the large part fruit plays in keeping people well. Will you not join this national movement to develop this great American industry of fruit growing? One which is indispensable to the health and pleasure of your country.

The JUNIOR AMERICAN FRUIT GROWER CLUBS will be organized by us in co-operation with State Club Managers, County Agents, Extension Workers, etc.

WE WILL HELP YOU TO GET STARTED

The AMERICAN FRUIT GROWER will loan money to boys and girls to help them buy fruit trees, plants and vines. The only conditions for securing a loan are that you have your parents' consent, and secure the endorsement of your State Club Manager, County Agent, Extension Worker or local merchant.

We will help you to select the right varieties of fruit, tell you how to plant and care for them, how to spray, and then how to pack and sell the fruit to the best advantage.

PLANTING SEASON FOR FRUIT WILL SOON BE HERE

Don't delay joining a JUNIOR AMERICAN FRUIT GROWER CLUB. You will find it profitable, interesting and just the way to make money.

SIGN THE BLANK AND RECEIVE FULL PARTICULARS

Mail now while you think of it. It costs you nothing to join.

Application Blank for Information

JUNIOR AMERICAN FRUIT GROWER CLUBS

Samuel Adams, AMERICAN FRUIT GROWER,
329 Plymouth Court, Chicago

Dear Sir: Kindly send me full information in regard to the JUNIOR AMERICAN FRUIT GROWER CLUBS. My age is _____.

Signed _____

Address R. F. D. or St. _____

Town _____ State _____

for January, 1919

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FRUIT AND FARM NOTES

By Edgar L. Vincent, New York

I happened a few years ago to be at the home of an old farmer when quite a windfall of money came to him. There were a good many gold pieces in the little nest egg, as well as considerable money in other forms. The old man counted the money over almost silently, as if quite stunned by his unexpected good fortune. After he had done this, he went and sat down in the door, looking out toward one of his orchards. Then he said, "Now I'll set out some more fruit trees!"

He already had two good orchards. Life was away long toward its sundown with him. The chances were very much against his living to see the fruit from any trees he might plant, but his heart was so warm toward fruit trees that he could not think of any better way to use his money than to add to his orchard. I never have forgotten this little incident; it impressed me greatly that one so old appreciated the value of fruit so much that in his old age he should want to leave a monument of this kind to his memory. It certainly was fine.

Resurrecting an Old Orchard

A young farmer of my acquaintance went to a place a few years ago on which there was an old, scraggly orchard. It had been years since a bit of pruning had been done. The cattle had run through the orchard and got what apples grew on the trees every year, and altogether it was a most unpromising prospect. But the young man set about trimming up the trees and seeing to what was left of them. A number of vacant spaces were set out to small trees and a fence built about the whole.

For a year not much came in the way of results. Then the farmer sprayed his trees, inspiring a number of his neighbors to go in with him and change work to do the job. The very next year a profitable harvest was gathered, and last fall he had as nice a group of fruit as one would care to look upon. The apples were fair, and almost all of marketable size. He sold the surplus right at home, netting a handsome sum. Certainly it paid.

A Little Farm Gold Mine

That is about what an orchard is. For a little while in the fore part of the year, some time must be spent pruning and otherwise caring for the trees. Again, in the fall, the crop must be gathered. The remainder of the year all the farmer has to do is to look on and be happy, while nature does her perfect work. For the time, and labor, and money expended, nothing pays better than a good orchard. And then there is joy in watching the fruit grow as well as health in using the fruit after it is matured, and helping others to get a goodly supply of this wonderful fruit. As a philanthropic work, fruit growing has great charms for the lover of the good and the beautiful.

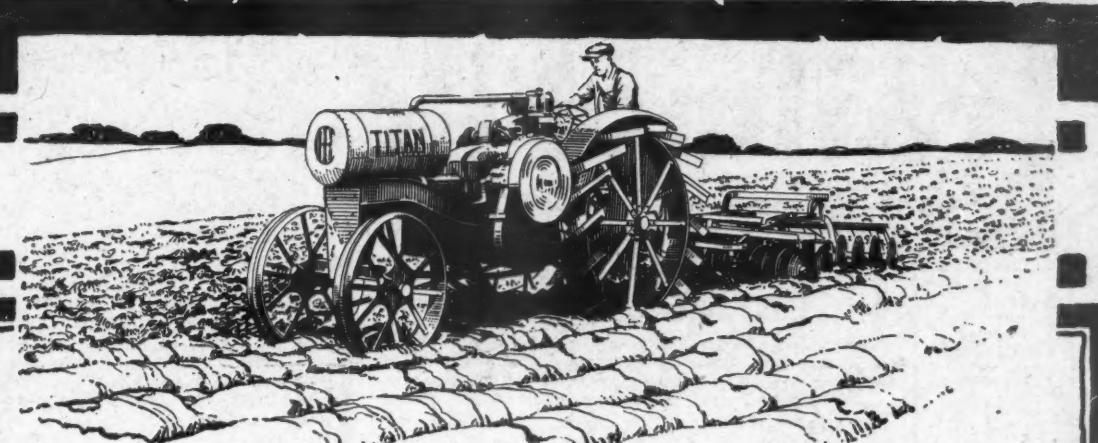
LABEL WIRES DAMAGE TREES

Even the experienced fruit grower sometimes overlooks the fact that the wire used in fastening the label to a young tree often causes the death or disfigurement of the tree. As I look out of my office window I see what I call a hedge row of peach trees planted three feet apart last spring. Yesterday I was pruning these trees, cutting back a large part of the new growth of last year, and discovered that my gardener had left the wires holding the labels encircling the trunk of each tree. There was plenty of room for expansion seemingly at the time of planting but the bodies of the trees have more than doubled in size, and in many instances the wires cut deeply into the bark and almost through each tree.

Here is a lesson for tree planters. Never let the label wire encircle the trunk of a newly planted tree. The place to fasten the label is on a twig and not on the body or trunk of the tree.

THE TANGELO

A new type of fruit, which has been named the tangelo, has been produced by the bureau of plant industry through a cross between the tangerine orange and the grapefruit, or pomelo. As a class the tangelos resemble round oranges more than either of their parents and are exceedingly variable. Two well-recognized varieties have been thoroughly tested and have been distributed to co-operators for further trial. The tangelo has little acidity and resembles a tender and good flavored orange more than a grapefruit or tangerine.



The Tractor to Buy

ARE you one of the many farmers who need more power to handle the farm work properly? Do you have to work with less help than you need?

If so, you need an International kerosene tractor. The size that gives you power for your heaviest load will handle all the work. Internationals use only as much fuel as the load requires. They are made to work with farm machines—the kind you are now using—and special hitches are provided for all kinds of field and road work. Their belt pulleys are large enough to prevent slippage, run at correct speed, and are set high enough to keep the belt off the ground. They all use kerosene or other low-grade fuels which means a big saving in operating expense.

The Company to Buy From

You know that we have supplied farmers with high-grade machines for nearly 88 years. You know that our tractors have furnished satisfactory farm power for more than 12 years. We have far too much at stake to market machines of any but the highest standards of quality. We expect to

come back some day and sell you some other machines in the long list you see in this advertisement. In every sale we try to build for the future.

Tractor Service Whenever Needed

In line with this policy, we have developed a service organization which now consists of 89 branch houses and many thousands of loyal local dealers, wide awake and attentive to the needs of their customers. Service is a very essential part of any tractor sale. When you buy an International kerosene tractor you buy with it the assistance of an organization that brings a well stocked branch house or a live, local dealer within telephone call, fully equipped to keep your tractor working steadily.

International Tractor Sizes

International tractors, all using kerosene for fuel, are made in 8-16, 10-20, and 15-30 H. P. sizes. A line to the address below will bring you full information about all our tractors and about any other machines you mention in the list shown in this advertisement.

The Full Line of International Harvester Quality Machines

Grain Harvesting Machines	Haying Machines	Dairy Equipment
Binders	Mowers	Cream Separators
Headers	Rice Binders	Feed Grinders
Harvester-Threshers	Side Delivery Rakes	(Hand)
Reapers	Loaders (All Types)	Cream Separators
Threshers	Rakes	(Belted)
Tillage Implements	Combination Side Rakes and Tedders	Kerosene Engines
Disk Harrows	Sweep Rakes	Gasoline Engines
Cultivators	Stackers	Kerosene Tractors
Tractor Harrows	Combination Sweep Rakes and Stackers	Motor Trucks
Spring-Tooth Harrows	Baling Presses	Motor Cultivators
Peg-Tooth Harrows	Bunchers	
Orchard Harrows		
Planting & Seeding Machines	Belt Machines	Other Farm Equipment
Corn Planters	Ensilage Cutters	Manure Spreaders
Corn Drills	Huskers and Shredders	Straw Spreading Attach.
Grain Drills	Corn Shellers	Farm Wagons
Broadcast Seeders	Hay Presses	Farm Trucks
Alfalfa & Grass Seed Drills	Stoie Burr Mills	Stalk Cutters
Fertilizer & Lime Sowers		Knife Grinders
		Tractor Hitches
		Binder Twine

International Harvester Company of America

(Incorporated)

CHICAGO

U. S. A.



DAYTON AIRLESS - TIRES -

Can't Puncture Can't Blow Out

Piers of live, elastic rubber built about one inch apart inside the casing and vulcanized or welded to it to take the place of an inner tube. Nothing can happen but wear. 30x3 and 30x3 1/2 sizes only—Ford Sizes. More than 50,000 cars equipped with them in 6 years. Big Money is becoming our exclusive dealer in your county. Tire experience unnecessary. Write today for terms. Dept. AG, The Dayton Rubber Mfg. Co., Dayton, O.



FREE
\$20
Violin, Hawaiian Guitar
Ukulele, Guitar, Mandolin, Cornet or Banjo
Wonderful new system of teaching note music by mail. To first pupils in each locality, we'll give a \$20 superb Violin, Mandolin, Ukulele, Guitar, Hawaiian Guitar, Cornet or Banjo absolutely free. Very small charge for lessons only expense. We guarantee success or no charge. Complete outfit free. Write at once—no obligation.

BLINGERLAND SCHOOL OF MUSIC, Dept. 426, CHICAGO, ILL.

GIANT TOMATO-CUCUMBER-PEANUT-10c

Here Are Seeds of Three Valuable and Interesting Varieties You Should Grow In Your Garden This Year.

Giant Climbing Tomato—Is one of the largest grown. Vines grow very strong and will carry an enormous weight of fruit, very solid, crimson color; specimens often weighing 4 to 5 lbs. each.

Japanese Climbing Cucumber—is a grand variety from Japan; can be trained to fence, trellises or poles and save space in your garden. Fruits early, growing 10 to 15 inches long, and are good for slicing or pickling.

Early Spanish Peanut—Earliest variety and a great peanut for the North, easy to grow, enormous yielder, and a few hills in your garden will be very interesting to show your neighbors.

Special Offer: I will mail one regular sized Packet of Tomato, Cucumber and Peanut for only 10c, or 3 Packets of each for 25c.

My new Seed Book of Garden Seeds is included free. Order TODAY. F. B. MILLS, Seed Grower, Dept. 23 Rose Hill, N.Y.

Early Spanish Peanuts
Climbing Cucumber



FARM WAGONS

High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.

ELECTRIC WHEEL CO., 24 Elm Street, Quincy, Ill.



Kindly Mention American Fruit Grower when writing to Advertisers

Orchard Problems and Their Solution

By Paul C. Stark, Associate Editor

Pruning Fall Planted Trees

Q.—Should fall planted trees be pruned planting time? Should all fruit trees be pruned severely when planted?—C. R. W.,

A.—Prune fall planted trees early in the spring before buds swell—not in the fall when planted. Prune spring set trees as soon as planted. Cut out entirely weak, broken or bruised limbs, keeping the head properly balanced; then shorten the remaining limbs to three or four buds at the most. Do not prune newly planted cherry trees. When planting peach trees, head the top back to eighteen to twenty-four inches from the ground and cut the limbs back to stubs one to two inches long. Prune pear and plum trees about as you do apple. If one-year apple or pear are planted cut them back to about twenty-four inches, selecting three or four shoots as they appear to form the framework of the tree, removing other shoots. Head a tree right when you plant it and heavy, dangerous pruning will not be necessary when the tree is older.

Bees in the Orchard

Q.—Would you advise the man with an orchard to raise bees? There is a good demand for honey at high prices and an experiment station man told me that plenty of bees insured the distribution of pollen in the orchard.—R. A., Va.

A.—Mr. E. P. Powell, in his book "The Orchard and Fruit Garden," says: "One of the most wonderful things in the world is the bee; and the most remarkable bee is the common honey bee. It is just exactly made to bring two badly fitted parts of nature into adjustment. No matter how grand the fluorescence there will be little result on many of your trees without cross pollination. This cannot as a rule be accomplished by the wind. The bee just fits into the gap. It is covered all over with fuzz, which constitutes a natural pollen brush. Wherever it goes to collect honey it is obliged to crawl in among the blossoms and by so doing mixes the pollen of different vines or trees." No one could tell it better; the bee is a great friend of the fruit grower and bees in your orchard are profitable, aside from the honey they produce.

Q.—Are peach trees ever grown as dwarfs? If so, where can I get them?—M. W., Tenn.

A.—Peach trees can be dwarfed slightly by budding on plum, and while this process is successful it is seldom resorted to and I do not suppose there is a nursery in the country that offers them. If you do not want peach trees to grow large keep the branches shortened in and you can easily control the size.

Beautifying the School Yard

Q.—What kind of shade trees would you advise me to plant on the school grounds here?—J. S. T., Ind.

A.—There are several kinds that will be satisfactory, but no matter what kind you plant, be sure and plant large size trees. School grounds are not the place for small trees. The silver leaf maple is a quick growing tree and while it is not long lived some others it is a splendid tree. Silver leaf maple, Norway maple and American elm will probably be your best ones.

If your school grounds are practically bare, it will pay you to consult a landscape architect and have your grounds planted properly. Any one of the larger nurseries will give you the benefit of the advice of a landscape man who will take the plan of your grounds and work out a planting scheme, showing you just where to plant trees for best results, also where you can use shrubs, etc., to best advantage. Too few school grounds are planted as they should be, but school boards in different sections are beginning to see the value of beautifying school property. Within fifteen miles of my home is a small country school building where the grounds are properly planted. This school has been made famous. A number of publications have carried write-ups and pictures of these grounds. The Missouri State Board of Agriculture in its report also carries a picture of this building and grounds. All this was made possible by the intelligent expenditure of just a few dollars and the co-operation of teachers and pupils.

Q.—Am thinking of setting out about

two acres next spring—Jonathan and Stayman Winesap; possibly some earlier. Do you advise any others?—H. R. K., Iowa.

A.—Jonathan and Stayman Winesap are good sorts and you won't go wrong if you plant just these two and no others. If, however, you want to add one other variety, my choice would be Stark Delicious. With these sorts you would have three of the best quality apples known. If an early summer apple is wanted, use Liveland Raspberry; late summer, Wilson Red June; fall, Wealthy.

Q.—Can you expect a profitable crop in a vineyard three years old? What is the best white grape?—A. R. H., Ohio.

A.—Yes, you should have a profitable crop at three years, but not what would be called a full crop. Diamond and Niagara are undoubtedly the best white sorts.

no Grimes Golden wood is within six inches of the ground, thus is Collar Rot (the trouble that kills your Grimes Golden trees) done away with.

Q.—What kind of land grows the best onions and how should it be prepared? How many bushels will an acre grow?—A. R. M., Mo.

A.—A rich moist loam with a clay subsoil is preferable. Fertilize heavily, you can't get the soil too rich. Spread ten to fifteen tons of well-rotted stable manure to the acre, and plow deep in the fall. Seed should be sown as early as it is possible to prepare the soil; use about four pounds of seed to the acre and the rows should be kept about 12 inches apart. Good growers generally produce from 350 to 450 bushels per acre. Be sure you select a well drained piece of land for your

is jelly made from red currants, red raspberries and sour cherries, using an equal amount of currants and raspberries and half the amount of cherries.

Attend Horticultural Meeting

I received a letter a few days ago from an Indiana man and I quote: "I had intended to send some of my apples to the Indiana apple show this year, but I neglected to select them until the best ones were packed so I gave up the idea."

You made a mistake, my friend. You should have taken time to select the fruit for display, and what is more you should have taken it to the show yourself. It has been my privilege to be present at several of your Indiana meetings and they are among the very best I ever attended. Every fruit grower in your state should save a few plates of apples and take them to this meeting. The horticultural societies are doing a wonderful work for the improvement of orcharding, and they should have the co-operation of every fruit grower.

We really do not realize the importance of these meetings, and what a great influence they have had in upbuilding horticulture, encouraging better orchard methods, and showing by example what can be done by proper cultivation, pruning, spraying, and in proving what varieties are best for the different localities of their state. We should all take more interest in our horticultural societies and should attend their meetings even if we must make some sacrifices to do it.

Q.—What can you tell me about the Timme cherry? Do you advise planting it?—E. W. D., Mich.

A.—This cherry is of the Early Richmond type, ripening practically at the same time, and resembling it in fruit, though smaller. A number of years ago it was planted moderately, but I never was convinced that it was as good as Early Richmond. Dyehouse is superior to either in my judgment.

Q.—What is the best asparagus for me to plant? I want large stalks.—B. M., Iowa.

A.—There are several good kinds, but I prefer Conover's Colossal. The care given in growing will determine whether or not you get large stalks. Don't forget that asparagus requires rich soil; in fact, it can hardly be made too rich.

Japanese Plums

Q.—What do you consider the best Japanese plum? Are the hybrid Japanese varieties making good, or would you advise planting Japanese sorts instead?—A. R., Ind.

A.—The importation, selection and introduction of Japanese varieties of plums into this country marked a new era in American plum growing. All praise to Mr. Burbank for his tireless work in this direction. Of course, there were other importers and experimenters who deserve credit, but Mr. Burbank was the pioneer. Abundance, Burbank, Red June, and Satsuma are probably the best ones. Abundance would be my first choice, Red June, second. Burbank would be my second choice but it rots badly.

The Japanese Hybrids are becoming more and more popular and the planting of the Japanese varieties is on the decline for this reason. The Gold is my first choice among all the hybrids; it was produced by Mr. Burbank in 1887 or 1888 and was introduced by Stark Bros. in 1894. Shiro (Early Gold) is my second choice; America, third, then Omaha. Many other good hybrid sorts like Climax, Sultan, First, Last, Combination, etc., have been tried out and discarded mainly because of susceptibility to rot. Omaha, a cross between Abundance and Brittlewood (Triflora X Americana)—not a true Japanese hybrid, is being widely planted. The hardy Americana strain in it is making it popular farther north than the Japanese or hybrid Japanese sorts will stand. You can safely plant in your section any of the sorts recommended above.

Dormant Spraying

Q.—How soon can I spray my trees for the dormant application? Do I have to wait until early spring to make this spray as directed in the bulletins?—A. M., Ky.

A.—The dormant application to fruit trees is made any time during the fall, winter or early spring. Sometimes, where



Original Grimes Golden Apple Tree

Here is the tree from which all trees of this well-known variety have descended. Though now too old to bear fruit, it should hold the interest of all those fruit growers who are indebted to it for their profitable orchards of Grimes Golden. A century has passed since it was discovered growing wild on the banks of the Ohio River.

Both are good, but I prefer Diamond—nothing considered.

Grimes Golden Apples

Q.—My Grimes Golden trees are dying and some of them not yet twelve years old. Orchard men tell me that planting double worked trees will overcome this young dying habit. What variety should they be double worked on?—C. W. M., Va.

A.—Double working weak growing varieties of apples has been practiced for years, and many different varieties have been tried out as stocks. I have used Northern Spy, Tolman, McMahon, and others, but have found Stark Delicious the best all-around stock for double working weak growing kinds. For this work a long scion and a short root is used in making the graft and when planted in the nursery four or five inches of the scion is below the surface of the soil. As the Stark Delicious roots quickly on its own wood, roots start out from this scion and in two years it is to a certain extent on its own roots and after the tree is transplanted in the orchard this root growth continues and before long the Grimes Golden tree is practically on Stark Delicious roots and

onions. If the drainage is not practically perfect, tile drainage will be necessary.

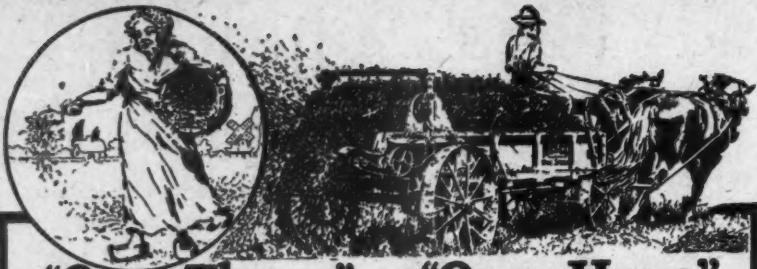
Q.—What do you consider the best blackberry for the garden and for market?—J. R., Kans.

A.—There are a number of good varieties and each has good points. The Early Harvest has long been a popular kind and it has made lots of money for growers. However, it is only moderately vigorous and is a little too tender for cold climates. Everything considered, I believe Merseereau about the best all around market and home berry. It is very similar to Snyder but is larger, better quality, holds up better after it is picked, and is extremely hardy.

To Improve Raspberry Jam

An old-time friend, who has a local reputation as a splendid cook, made the following suggestion the other day that may interest some of our readers:

"Raspberry jam is a great delicacy, but it nearly always lacks character or is a little flat. If, while making it, you will add some currant juice to give the necessary acidity, the flavor will be very, very much improved." Another combination



"Over There" and "Over Here"

Necessity has taught the thrifty peasants of Europe the golden value of manure. Every ounce is painstakingly returned to the soil, even if it must be done by hand to get good distribution. That is why "Over There" they get such large yields per acre.

"Over Here" we have not been forced to raise as many "bushels per acre," but modern machinery enables us to produce more "bushels per man."

Progressive farmers who realize the value of manure and leading authorities agree that one of the best paying machines for the farm is the

"I bought one of your Manure Spreaders about three years ago. I have used others, but they are not good spreaders like yours. Those two cylinders do the work to please, and then that distributor pulverizes it right. It runs light and I like it well."
Henry L. Lath. N.Y.

"I have one of your Spreaders for four years and it has given me the best satisfaction. We spread manure every day during winter and even when weather conditions are very unfavorable. I would not give your machine for any other make of spreader that I have ever seen. I consider it the best paying investment a farmer can make."
C. M. Hatch. Ohio.

"Last Winter my son purchased one of your spreaders, though I had an old one before. I thought he could get along with it, but of no better way to tell you what I think of yours than to say that it is just as far ahead of my old one as the old one was ahead of the fork and wagon. Every farmer should have one."
Marion Bear. Indiana.

Original letters on file.
Addresses upon request.

NEW IDEA

Registered U.S. Pat. Off.

Saves time, spreads even and wide, pulverizes thoroughly and distributes the manure just right to get its full value. One man with the New Idea can do more and better work than several with pitchforks.

The New Idea Spreader has been widely imitated but an imitation is never more than an imitation. To get the best spreader get THE ORIGINAL—the New Idea—the machine that revolutionized old-fashioned methods, that has always been the leader, that has stood every test.

See the wide spreading New Idea at your dealers. Look him up or write us for his name. We will send you our booklet, "Helping Mother Nature," which gives much valuable information. Send for a copy today.

NEW IDEA SPREADER COMPANY
Spreader Specialists. (5) Coldwater, Ohio

ROSES of NEW CASTLE is the title of a beautiful book on the culture of roses and other plants: gives expert experience of a lifetime. It's free. Exquisitely illustrated in natural colors; offers and tells how to grow these famous plants. Write for copy today.

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there is a bad infection of scale, two applications are made, one in the fall and one in the spring. If thoroughly applied this will go a long way toward cleaning up the trees. As to winter spraying, it is all right to spray any time during midwinter when the days are mild.

This year there has been ideal weather for dormant spraying during December. Lime-sulphur in a concentrated strength, generally one part of the commercial product to eight parts of water, is used for a dormant spray. The miscible oils are also used effectively for dormant spraying. Scalecide is one material that has given good results as a winter spray. No matter what material you spray with, spray thoroughly, hit every twig with the spray.

One-Year Apple Trees

Q.—Do you advise the planting of one-year apple trees or older ones? What are the advantages of each?—B. C. M., Ill.

A.—There has been a mistaken idea among some tree planters, who have not tested out the different aged trees, that the older the tree they plant the quicker it will bear fruit and the stronger it will grow. That idea is wrong, in fact just the reverse is true. When the fruit tree is dug in the nursery, there is a certain shock of transplanting that tends to check the growth of the tree after it is planted in the orchard. The older the tree that is dug in the nursery, the more roots are cut off and the greater the shock to the tree. Therefore the one-year tree would have a much better chance of living and this is the experience of growers in every part of the country. I have often heard of large commercial plantings of one-year trees where the planter reported every tree growing.

The one-year trees start growing quicker and experience shows they bear just as soon or sooner than where older trees are planted. One of the main advantages of one-year trees is the fact that the grower can make the head of his tree just at the height he desires. This is not possible with the older tree that has its head trained in the nursery.

I have seen so many plantings of one-year trees as compared with older trees, that I would choose one-year trees without a moment's hesitation for an orchard that I was planting on my own land.

Selecting the Location

Q.—Do you advise fillers in an apple orchard? If advisable to plant fillers what would be best for my section? I have fairly good average land, some gently rolling, part on a hillside and part somewhat wet in the spring. Where would you advise me to plant the orchard?—P. N. R., Ind.

Q.—In the first place, I would advise you to plant your orchard either on your gently rolling land or on the hillside—not on the wet land. Fruit trees do not like wet feet. Of course if you tile-drained the wet land it would be all right for orchard. Frequently land that is too steep for cultivation is either used for pasture or allowed to grow up in brush and become merely a waste space. This same land can generally be planted to orchard and pay far better than the best land on the farm.

Last fall I visited two of the leading apple regions of Illinois, one at Griggsville and the other in Calhoun County. Much of the land in these two sections is very hilly and would be considered undesirable for farming as it would be too steep to cultivate. However, the apples from this land have made the owners rich—those who have been wise enough to plant orchards. In Calhoun County land could be bought a few years ago for \$30 or \$40 per acre. Since then the apple orchards have come into their own, and that same land that was offered for \$30 or \$40 now brings \$200 to \$250 per acre without a tree on it. Just the influence of the profit made on nearby orchards has boosted the price of the cleared land which is not planted to orchards.

Now as to the question of fillers—yes, I would advise their planting, but you must make up your mind to cut them out just as soon as they begin to crowd the permanent trees. Some growers make the mistake of leaving the fillers until they seriously injure the permanent trees. I know a man over east who has a Stayman orchard with Yellow Transparent as fillers. Those trees are now 18 or 19 years old and the fillers should be cut out. Now he is up against a tough proposition—he is making a lot of money off of his Stayman and his Transparents, too. He should cut out his Transparents right now, but he finds it so handy to have two different crops coming at dif-

American Fruit Grower

ferent seasons. Incidentally the two profits enlarge his bank account.

Make up your mind that you will have the nerve to cut out the fillers when the proper time comes, then go ahead and plant fillers.

The above experience brings out another point—early apples bear young and make splendid fillers. My personal observation has been that the following are among the best early apples for fillers: Yellow Transparent, Henry Clay, Duchess of Oldenburg, Liveland Raspberry, Benoni and Wilson Red June. Other apples that are classed as fall apples and make good fillers are the Wealthy and Wagner. Winter apples that are good fillers are Grimes Golden, Black Ben, King David and Jones.

Other trees besides early apples that are adapted to use as fillers in the apple orchard, are peach trees and cherry trees. Both of these come into bearing early and will make good profits before they have to be cut out. They have been tested out thoroughly as fillers and have been found very profitable. Bear in mind that the fillers bear young and make the orchard pay earlier and bigger dividends than if the filler system were not used.

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6. The "Tractor and Truck" department is ably edited by a famous authority on this vital subject. The great and growing importance to farmers of these machines, justifies our laying special emphasis on this department.

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8. It has a most interesting "Bee Keeping" department, a thing which is attracting more and more attention from fruit growers as a desirable side line.

9. In the "Livestock and Dairy" department you may learn how best to care for the farm stock at the least cost to yourself in time and money, and at the greatest returns from the animals in labor or production.

10. You are kept fully informed as to the date and place of all horticultural meetings, events which are of great importance to fruit farmers, as they serve to keep him abreast of every movement in the fruit field, whether it be a question of growing, marketing, packing or legal status.

11. Your questions are answered and your problems solved by experts whose pleasure it is to hear from you and to offer all the help which their knowledge and experience places at your disposal.

12. The home-maker is not forgotten, and much that is helpful, uplifting and conducive to the welfare and happiness of the family is found in its pages.

13. The AMERICAN FRUIT GROWER is progressive in all of its policies and stands for the best interests of the farmer everywhere.

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Let us be busy with the road drag this winter. The boys who come home will be very appreciative of good roads after a season of Flanders mud.

Some Experiences in Orchard Fertilization

By W. C. Rohde, Ohio

THE FERTILIZED block of trees had foliage so much heavier and darker in color that the difference between it and the rest of the orchard could be seen from the highway over a half-mile distant, and folks passing would ask me 'What had I done to those trees?'

In this way one of our southern Ohio co-operators begins his report of the fertilizer experiment conducted on his orchard. Nor was the only effect that on the foliage. The increased yield and the improved quality of the fruit from these trees was a natural consequence of their thrifty growth. Proper fertilization of his orchard had brought results.

It is only within the past decade or so that orchard fertilization has received the attention it merits. No use of fertilizer returns a higher profit.

Dr. Stewart of Pennsylvania State College has perhaps the best set of figures on orchard fertilization of any in the country. His experiments extends over a number of years and have been made on all sorts of soils, with many kinds and combinations of fertilizers and on trees of all ages.

Of little less importance are the experiments of the Ohio Agricultural Experiment Station in southeastern Ohio, where a few years ago orcharding was practically an abandoned industry, but now, thanks to the work of the station, this is one of the leading apple growing sections of the state. The results here were secured partly by pruning, partly by spraying, but largely by proper fertilization.

Several General Principles

No invariable rules or formulas for orchard fertilization can be safely laid down because of the wide range of conditions which must be met. Nevertheless several general principles have been established by the work of both the Ohio and Pennsylvania stations.

It pays to fertilize the orchard, not only the bearing trees, but the young trees as well.

Hillside orchards and those on thin soils show the biggest profits, but orchards on what is considered fairly good soil show a very profitable return for the money expended in fertilizers.

To get the best results, fertilize every year. In the off year the orchard gathers strength to produce the bumper crop of the good year.

Commercial fertilizers pay better than manure, are easier to apply, especially in hill sections, and are quicker in action.

The elements most necessary in orchard fertilization are phosphoric acid and nitrogen. Nitrogen is invariably the more needed and shows the greater results. Quick acting forms of these elements should be used, as acid phosphate for the phosphoric acid, and nitrate of soda or sulphate of ammonia for the nitrogen.

For bearing trees a mixture of five pounds of 16% acid phosphate and four pounds of sulphate of ammonia is a reasonable application each season. If nitrate of soda is used instead of sulphate of ammonia, more is required, as it contains only three-fourths as much nitrogen as the sulphate. The best results are obtained from an application made early in the spring, at about the time of blossoming. Some orchardists scatter the fertilizer evenly over the entire surface; others spread it in a circular strip around the tree where it will catch the drip from the branches and be washed down to the feeding roots

which are always some distance from the trunk of the tree. The first method insures a more even stand of grass for mulching, while the second gives the tree a greater proportion of the fertilizer for immediate use.

The primary effect of fertilization is the increased vigor of the tree. This increased vigor enables it to set and to carry to maturity more fruit, and the fruit ripened is of the better size and quality. Increased yields from well fertilized plots are sometimes so great as to look unreasonable, but a trip through the hill orchard section of Ohio is bound to dispel doubt, for here one can certainly find the proof of fertilization's benefits.

Young tree well fertilized are likely to bear earlier than unfertilized trees of the same planting. Ability to withstand winter killing and other injuries is sometimes a result of good fertilization.

it is somewhat more easily to handle.

For several years we have been co-operating with farmers in making orchard fertilization tests with sulphate of ammonia as the nitrogen carrying material. These experiments have fully demonstrated that in states where coal is coked the fruit grower has a home supply of a nitrogenous fertilizer capable of giving him the best of results. One or two of these experiments may be of interest.

Test plots for two varieties, Rome Beauties and Ben Davis, were laid out in the orchard of Everett Craig, Mt. Healthy, Hamilton County, O. This is in the hill section, on a clay soil rather depleted of fertility. Each plot consisted of five trees; there were two plots for each variety, a fertilized plot and a check or unfertilized plot. The results are given in the tables below. Pictures are also shown of the yields from an average fertilized and from

These tables give a very clear idea as to the value of fertilization in orchards. Fruit growers should study the results carefully, and draw their own conclusions as to why they should fertilize their orchards.

Orchard Fertilization Experiment—1918

Variety: Rome Beauty.

Average Yield per Tree

Fertilizer Treatment	GRADES				Figures refer to diameters of apples
	Below 2 1/4 in.	2 1/4-2 1/2 in.	2 1/2-3 in.	Above 3 in.	
No Fertilizer	0.375 bu.	1.0 bu.	5.0 bu.	6.375 bu.	
Sulphate of Ammonia, 4 lbs. per tree	0.25 bu.	1.0 bu.	13.5 bu.	14.75 bu.	
Gain	0.125 bu.	none	8.5 bu.	8.375 bu.	

NOTE—From the unfertilized tree a peck of windfalls, and from the fertilized a half bushel were obtained.

An example of the gain from fertilization of an orchard on a soil of average fertility is the experiment on the farm of Mr. Reutter, in Medina County, O. This soil is a heavy clay loam.

Orchard Fertilization Experiment—1918

Richard Reutter, Valley City, O.

Variety: Northern Spy.

Average Yield per Tree

Treatment	Yield of Apples			
	No Fertilizer	Sulphate of Ammonia, 4 lbs. per tree	Gain	11 bu. 17 bu. 6 bu.

In conclusion, the way to good yields of fine apples is to fertilize. The materials to be used will depend upon what the orchardist can get with least trouble and at the best price, and which can be applied with the least difficulty.

Every grower of apples will be wise to experiment for himself with various combinations of materials and varying amounts per tree, whether or not he thinks his orchard needs fertilizer. He will probably be as surprised at the results as others have been.

Dr. Stewart suggests the following mixture for a trial fertilizer to be used as a basis for experiments:

A General Fertilizer for Apple Orchards

Amounts per Acre for Bearing Trees

Nitrogen 30 lbs. carried in 100 lbs. Chilean nitrate and 150 lbs. dried blood.	Phosphoric Acid 50 lbs. acid phosphate, or in 200 lbs. bone meal or in 300 lbs. sulphate of ammonia.	Potash 25-50 lbs. carried in 350 lbs. muriate, or in 100 to 200 lbs. low grade sulphate of basic slag.
--	--	--

This mixture carries all three elements; nitrogen, phosphoric acid and potash. Many growers depend on a nitrogenous fertilizer alone, and get good results without using any of the other elements.

STORING THE TRACTOR

The high cost of tractors makes it advisable to store them for the winter with care. The Agricultural Engineering Department of the University makes the following suggestions:

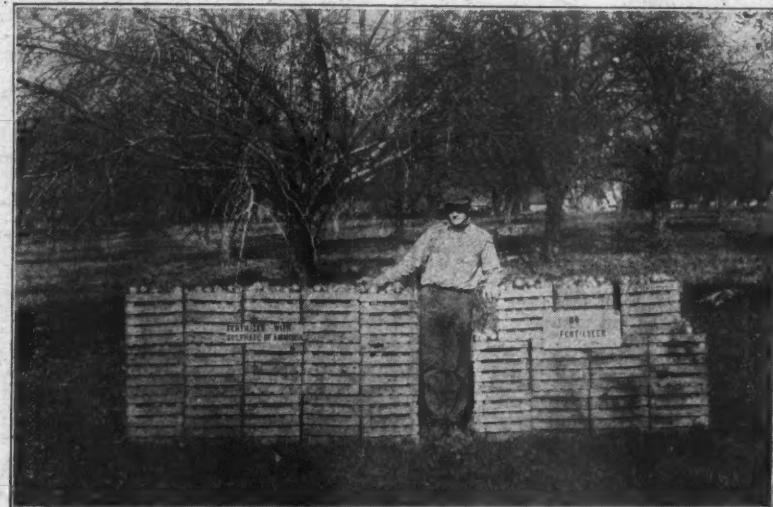
Be sure all water is drained from the cooling system and all fuel from the fuel tanks.

The last time the tractor is run, use heavy oil so as to coat the cylinders and pistons—a little oil might be poured through the priming cocks. This will prevent rusting of the cylinders and pistons.

Where the exhaust pipe is vertical, with the exhaust end up, cover to keep water out.

Clean grease and dirt off engine and all moving parts, and inspect whole tractor for breakage.

All new parts should be ordered at once on account of the difficulty in obtaining them. This applies to all machinery.



Average Yield From Fertilized Tree on the Left and Unfertilized Tree on the Right, Northern Spy Variety

Nitrogen, the most necessary of the plant food elements in orchard fertilization, is unfortunately the most expensive. Most orchardists have in the past depended upon nitrate of soda to furnish this element. The last several years have been rather trying for these men, because nitrate of soda is an imported product, and imported products have, as we all know, been rather uncertain quantities. The government's heavy demand for nitrates has also cut a big hole in the supply.

Sulphate of ammonia has recently become quite popular. It is a domestic product; a by-product from the coking of coal in the very states that are now so much in need of nitrogen for their orchards. In the past much of this ammonia has been lost, because the coal was coked in beehive ovens, but the war has been responsible for a big improvement in this direction and the number of by-product ovens, which permit the recovery of the ammonia, has been considerably increased. Orchardists should now have little difficulty in securing a quantity of sulphate of ammonia sufficient for their needs. In price it compares very favorably with nitrate of soda and

an average unfertilized tree of the Ben Davis plots.

In commenting on these tests the Ohio Farm Bureau Monthly has this to say:

"During the past season an application of fertilizer has shown good results on some of the trees, the fruit yield having been increased from six to eighteen bushels. As the cost of the application is but thirty cents per tree and the increase due to applying the fertilizer was \$20.00 on many of the trees, the investment obviously rivals the wildest get-rich-quick schemes. Incidentally Mr. Craig is investing most of his money in Liberty Bonds."

Orchard Fertilization Experiment—1918

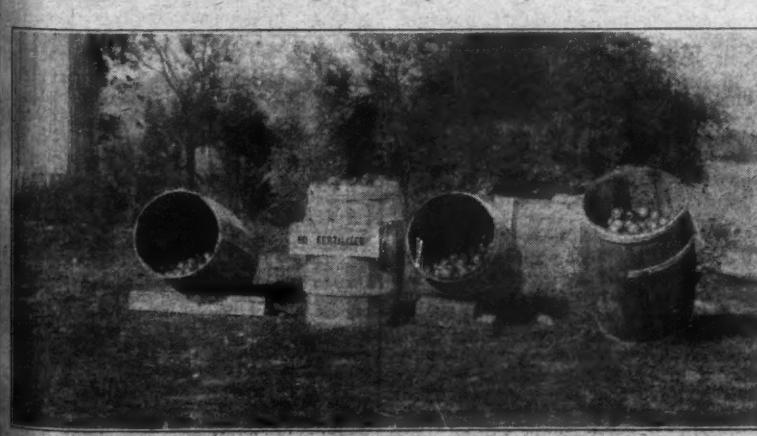
Everett Craig, Mt. Healthy, O.

Variety: Ben Davis.

Figures refer to diameters of apples

Fertilizer Treatment	GRADES				Figures refer to diameters of apples
	Below 2 1/4 in.	2 1/4-2 1/2 in.	2 1/2-3 in.	Above 3 in.	
No Fertilizer	4.5 bu.	2.0 bu.	0.25 bu.	6.75 bu.	
Sulphate of Ammonia, 4 lbs. per tree	7.0 bu.	7.5 bu.	2.5 bu.	17.0 bu.	
Gain	2.5 bu.	5.5 bu.	2.25 bu.	10.25 bu.	

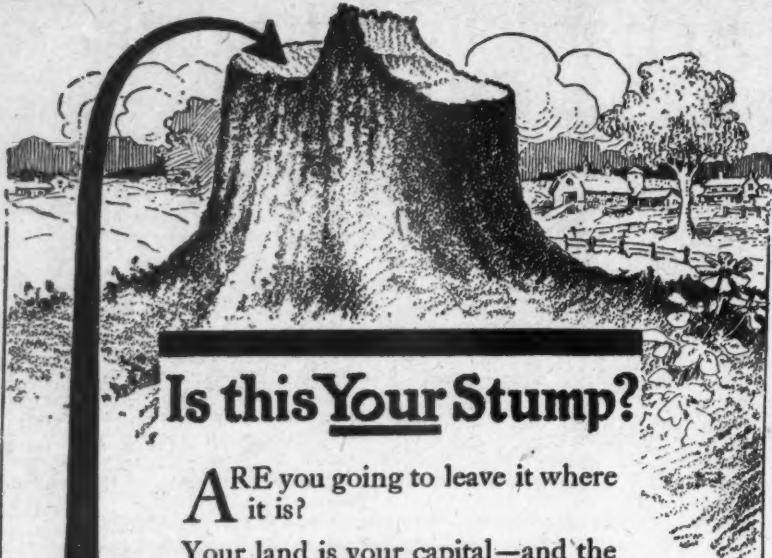
NOTE—There was about a bushel of windfalls from each tree.



Average Yield From Unfertilized Tree, Ben Davis Variety



Average Yield From Fertilized Tree, Ben Davis Variety



Is this Your Stump?

ARE you going to leave it where it is?

Your land is your capital—and the land under this stump is tied up in a non-productive investment.

Set this land to work—a little dynamite, properly placed, will do the trick. You can turn your waste lands into fertile fields by using

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Kindly Mention American Fruit Grower when writing to Advertisers

ILLINOIS APPLE SHOW

The first Apple Show of the Illinois State Horticultural Society was held at Hotel Morrison, Chicago, Nov. 19-22. The exhibit of fruit was exceedingly fine and those who had it in charge deserve great credit. The high quality and beauty of the fruit shown should be very encouraging to Illinois apple growers.

The following addresses were made:

"Observations on the Killing of Illinois Apple Trees," Dr. H. W. Anderson, Department of Horticulture, University of Illinois.

"Spraying Experiments in 1918," A. J. Gunderson, Department of Horticulture, University of Illinois.

"Cost of Producing Apples in Illinois Orchards," H. R. Stanford, Department of Agriculture, University of Illinois.

"The Commercial Manufacture of Insecticides and Spraying Material," L. A. Day, Chicago.

"Practical Discussions on Spraying, for the Control of Insects and Fungous Diseases by Practical Commercial Growers," W. S. Perrine, Centralia, J. Mack Tanner, Florida, R. A. Simpson, Vincennes, Ind.

"Recent Forestry Survey of Illinois," Dr. S. A. Forbes, University of Illinois.

"Extension Work in Horticulture," A. J. Gunderson, Department of Horticulture, University of Illinois.

"Address," Charles Adkins, Secretary of Agriculture, Springfield.

"My Trail Through the Orchards of the West," Senator H. M. Dunlap, Savoy.

"Winter Injury of Fruit Trees," B. S. Pickett, Department of Horticulture, University of Illinois.

"The Requirements of a Satisfactory Spray Outfit," E. H. Favor, Galva.

"Spraying and Dusting Experiments of 1918," W. S. Brock, Department of Horticulture, University of Illinois.

"Needs and Possibilities of Illinois Horticulture," J. C. Blair, Chief Department of Horticulture, University of Illinois.

"Fruit: Its Production and Use," Mrs. Nora B. Dunlap, Savoy, Chairman Food Production Committee, State Council of Defense.

"Storage Problems for Illinois," Dr. J. W. Lloyd, University of Illinois.

"Air-Cooled Storage Houses for Apples," Samuel Adams, Editor AMERICAN FRUIT GROWER, Chicago.

"Modern Orchard Implements," P. G. Holden, Director Agricultural Extension Department, International Harvester Company.

"The Pruning of Fruit Trees," Prof. E. J. Kraus, Prof. of Horticulture, Oregon State College, Corvallis, Ore.

"Fertilizing of Apple Orchards," Prof. E. J. Kraus, Corvallis, Ore.

INDIANA APPLE SHOWS

By H. H. Swaim

Although the apple crop of the state was very light and almost wholly in the hands of the commercial growers, the annual exhibit of Indiana apples was a success both from the standpoint of quantity and quality. The show this year was divided in two sections representing the northern and southern districts and at each of these shows varieties best suited to the locality predominated. Thus the Winesap, Rome Beauty and Ben Davis were best represented in the southern show held at Columbus. While the Northern Spy, Baldwin, Greening, Banana, and so forth appeared at the northern show at Peru. The Grimes and Jonathan and Stayman appeared to be equally popular throughout the state.

The most distinctive feature, however, was the exceptionally good program given at each show. The lectures of Dr. Chandler of New York, and Professor Brock of Illinois, Cruickshank of Ohio, and Alderman of West Virginia, interspersed with excellent talks by local speakers, made one of the best programs ever given by the Indiana Horticultural Society.

CHEERFUL ARMY FACTS

In filling government positions after the war, preference will be given to disabled men. 90% of the army men are insured. Disabled men, owing to the fine opportunities offered them in vocational training, are, in very many cases, making more money than before they entered the war. It is calculated that the improvement in health which the average man makes under the training in army camps will add five years to his life.



The Assurance of Honest Measure

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This feature alone promotes confidence and stimulates consumer quantity buying.

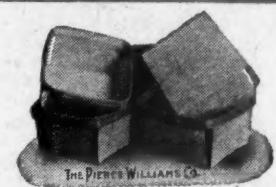
But there are many other advantages, which we may mention, that it exhibits its contents in the most attractive manner. It is more convenient to handle. It saves fully fifty percent in dead packing weight as compared with a box of similar capacity. It is as strong as a barrel and costs less than either a bag, barrel or box.

Write today for full particulars.

Interesting Bulletin on Request

A monthly bulletin of interest to packers and shippers will be gladly sent on request to you and your friends—just send names and addresses.

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"I Would Not Part with it for \$10,000"

So writes an enthusiastic, grateful customer. In like manner testify over 100,000 people who have worn it. Conserve your body and life first.

The Natural Body Brace

Overcomes WEAKNESS and ORGANIC AILMENTS of WOMEN AND MEN. Develops erect, graceful figure.

Brings restful relief, comfort, ability to do things, health and strength.

Wear It 30 Days Free at Our Expense

Does away with the strain and pain of standing walking; replaces and supports misplaced internal organs; reduces enlarged abdomen; strengthens and strengthens the back; corrects stooping shoulders; develops lungs, chest and bust; relieves backache, curvatures, nervousness, ruptures, constipation. Comfortable and easy to wear.

Keep Yourself Fit. Write today for illustrated booklet, measure blank, etc., and read our very liberal proposition. HOWARD C. RASH, Pres. Natural Body Brace Co. 147 Rash Building SALINA, KAN.

Tractors Trucks and Engines



Tractor vs. Percheron

IN ONE of our exchanges I notice a reproduction of a photograph showing eight beautiful Percheron horses drawing a three-bottom gang plow.

It made a beautiful picture—no question about that. Even to a man who isn't especially fond of horses I will admit it makes a more interesting scene than a thing made of iron and steel drawing a gang plow through a field.

Of course, making money isn't the only reason we farm or publish magazines, but those of us who haven't reached the financial stage where we can do these things solely for exercise and the fun we get out of it, are inclined to take a glance at the economic side of things in planning our work.

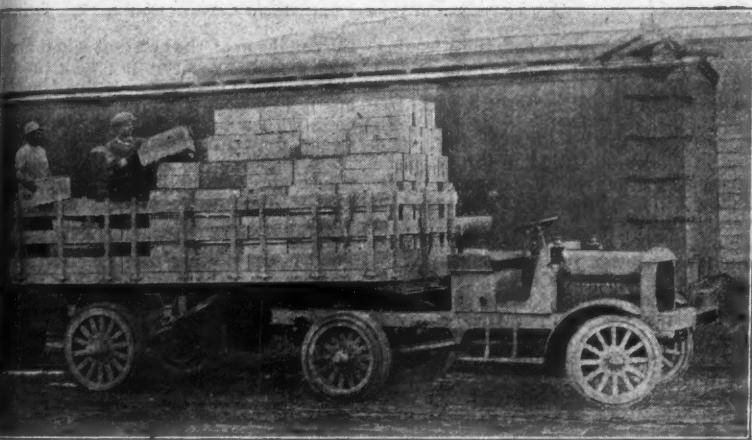
With economy of operation in mind—and that is one of the lessons the war has taught me—my first thought on seeing this picture

suggest what make of truck the prospective buyer should purchase, but there are a few things that should be considered in the purchase of any kind of machinery.

There are at least two hundred truck manufacturers in this country. Some of them make high-grade trucks and get correspondingly high prices for their products. Some make trucks of a cheaper grade and still others make low-price trucks.

Naturally, it depends a good deal on the character and extent of the work to be performed as to the grade of truck that it would be best to buy. While we are all familiar with the oft-quoted statement that "the best is always the cheapest," it is not always the most expedient.

For instance, if a farmer has a limited amount of hauling to do, never needs to load to full capacity or overload, or haul loads over bad roads or hilly country, a



When transporting any product one objective is to reduce to a minimum, the number of times that product is handled. The San Diego Fruit & Produce Co., San Diego, Cal., are compelled to handle their fruit twice in transporting them from the orchards to the refrigerator cars. A 12-ton Federal goes into the orchard and receives the crates, hauling them to the warehouse. Here they are sorted and sized and the fruit packed for shipment. From this place, a big Federal tractor with semi-trailer, takes ten tons to the refrigerator cars in double-quick time.

The second handling is necessary unless sorting plants were to be installed at the orchards, but the San Diego Fruit & Produce Co., handle the job at a very reasonable cost and with very little loss of time, by the use of these efficient trucks.

With the money those eight fine Percherons would bring, would buy a mighty good tractor, with probably a little change left to be used toward upkeep. In the next place the tractor would be easier to handle. Thirdly; if the plowing had to be done on a very hot day Mr. Plowman would have to be very careful not to overheat those fine animals and, therefore, a tractor would enable him to get more work done.

Assuming that the cost of feed for the horses while working would not vary much from the cost of fuel for the tractor doing the same amount of work, it doesn't require an expert mathematician to figure the difference in "fuel" during these winter days when there is no plowing, harrowing or planting to be done.

If the tractor has been properly put away, it need give the owner no concern, but it is no small chore to look after the needs of eight horses—and especially good horses.

There may be sentimental reasons for keeping horses, but from a purely business point of view the horse cannot compete with the gasoline engine in any place where the latter can do the work.

Get the Right Truck for Your Needs

Buying a motor truck is a matter of no small importance and, therefore, it should have careful thought and be the result of thorough investigation.

The fruit grower, or even the general farmer, will not use his truck every day, and a good truck should last for a number of years. And for that reason the man who has decided that he should have a truck should use reasonable care in selecting the kind of truck he will buy.

Obviously the editor cannot attempt to

low-price truck might answer his every purpose and give service for a long time. In such cases it would seem to be unwise to invest in a high-price truck and have several hundred dollars more than necessary tied up in an investment that was bringing no return.

On the other hand, it would be folly to buy a light, cheap truck and undertake to make it do the work that it requires the very best construction to stand.

But whatever the grade, the truck that is used is going to some day need repairs. Parts will wear out, accidents will happen and when trouble comes the owner will need new parts. It is well, then, in selecting a truck to get one that is adapted to the work and to be reasonably sure that when the time comes for an overhauling, or when repairs are needed that you will not have an "orphan" on your hands.

During these long winter days is a good time to get truck-wise. Get literature from good manufacturers. Talk with dealers and with men who own and operate trucks. A good way to get a good "line" on trucks is to talk with drivers of trucks in the towns or cities where trucks are given hard service every day.

Some Figures from Uncle Sam

Through its Bureau of Crop Estimates the government has made quite an exhaustive research regarding the use of motor trucks on the farm.

The results of this research are quite interesting. The figures given out are based on 1,473 county reports and have to do mainly with the cost of hauling corn and wheat.

The average cost per ton mile, according

Continued on page 55



Applied Patriotism

Woman has made herself indispensable to the Nation's war activities. This is being demonstrated daily in many splendid ways. The telephone operator takes her place in the front ranks of our "national army" of women.

Back of the scenes, invisible, her war work is to make telephone communication possible. Through her the Chief of Staff in Washington speaks to the Cantonment Commandant in a far-off state. The touch of her fingers forges a chain of conversation from Shipping Board to shipyard, Quartermaster General to supply depot, merchant to manufacturer, city to country, office to home.

Without her this increasing complexity of military, business and civil life could not be kept smoothly working. Hers is patriotism applied. She is performing her part with enthusiasm and fidelity.

The increasing pressure of war work continually calls for more and more telephone operators, and young women in every community are answering the summons—cheerfully and thoughtfully shouldering the responsibilities of the telephone service upon which the Nation depends. Each one who answers the call helps speed up the winning of the war.

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For Sixty-five Years thousands of farmers and gardeners have bought and planted vegetable and fruit seeds, fruit and shade trees, plants and shrubs, that have been grown by

The Storrs & Harrison Co.

America's Largest Departmental Nursery

1200 acres of fruit and shade trees, evergreens, shrubs and plants; 48 greenhouses for house and bedding plants, palms and roses.

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is a complete book of seeds, fruit trees, berry bushes, shade trees, evergreens for farm planting. Everything needed can be ordered from its pages; send for free copy.

The STORRS & HARRISON Co.
Box 654, Painesville, Ohio



REPRESENTATIVES WANTED

Within the next few months you can make a lot of extra money soliciting subscriptions for the

American Fruit Grower

We will make you an exceptionally attractive offer now.
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AMERICAN FRUIT GROWER, 329 Plymouth Place, CHICAGO

Midwinter Conditions in the Poultry Yard

By C. A. Langston, Editor "Poultry for Profit" Department

MIDWINTER conditions in the poultry yard approve or condemn the kind of management the flock has received. The good hens should commence to lay but the late hatched pullets will probably wait until February. In the meantime, feeding cost will be persistent and on this account many will become impatient and sell off what they will con-

For those who have hatched and raised their flocks right poultry keeping is very profitable. For those who are not getting eggs during this period of high prices, poultry keeping is unprofitable. Let some one of the few who sell their eggs in favored markets at highly favored prices should challenge this statement, it is well to explain that general statements as to profits and losses in poultry keeping refer to farm flocks. The products from such flocks are ordinarily marketed through country stores.

The cash price for eggs in a typical country town of a typical rural community is 55 cents a dozen cash and 60 cents in trade. These eggs are sold to local customers by these stores at 65 cents a dozen. The retail price of 83 cents a dozen for storage eggs already mentioned obtains in a large city less than a hundred miles from the village where strictly fresh eggs may be obtained at the grocery for 65 cents a dozen. Under these conditions small producers are not getting a fair price, but these conditions will remain until the small producers effect some co-operative plan whereby small outputs may be collected and handled at the highest market prices.

Changing Breeds

Every poultry keeper who manages his flock carefully and gets results when results are highly profitable, is sure to be consulted by the non-successful as to breed methods. If his breed is not that of the inquirer he will be requested to give advice as to changing breeds. While poultry keepers everywhere are always glad to give others the benefit of their own experience, they are most reluctant to advise the experiment of changing breeds, for they know that there is no one best breed, and they know that the main factors of success are breeding, housing and feeding.

These factors have been definitely determined by ample experience and they have been urged and recommended without ceasing, and still thousands of poultry keepers will repeat their annual failures year in and year out and not learn a single lesson. But strange to say these are the people who make faking profitable. They will spend their money for all kinds of remedies, they will believe fairy stories about wonderful flock production; but they are disinclined to favor plain, common sense advice about the care of their own flocks. They think they need a cer-

tion and no production is possible without the raw material. The hen can only do her part; her keeper must do his part, he must furnish the raw material.

Egg-Laying Contest

The Seventh International Egg-Laying Contest conducted by the Agricultural Experiment Station, Storrs, Conn., closed October 30th. A full report of the year's work will probably appear later, as in former years. The skeleton report for patrons and press gives some very inter-

experiments are carried out to show farmers and back-yard poultry keepers what may be done in their yards.

Baby Chicks

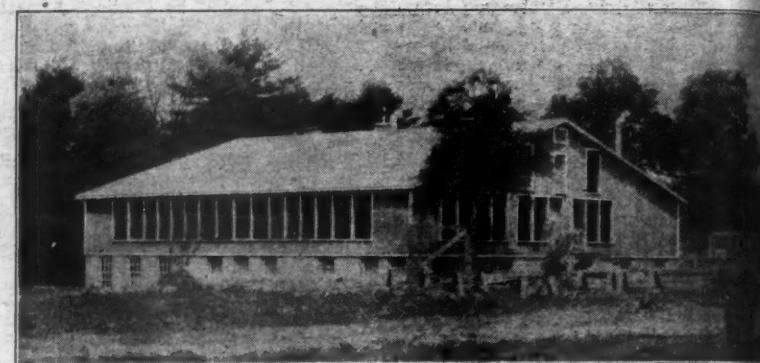
Almost any woman who has had a few years of experience in poultry keeping will admit that it is easier to hatch chicks than it is to raise them afterward. Much depends upon the breeding stock, although that fact is commonly overlooked. One egg may look just like another, but contains a strong or a weak germ, depending upon



All Happy With the Winter Snows

clude to be unprofitable fowls. But this is the wrong time for impatience and discouragement. Although many flocks have been carried at a loss, both hens and pullets will shortly commence to lay. It would be bad business to sell these fowls now. Hold on and relief will come soon.

This kind of experience should impress a lesson: remembering unfavorable experiences of this midwinter season try to avoid them in the future. Late hatched pullets invariably come into laying late, and molting hens almost never lay during the feathering stage. These are natural conditions entirely beyond the control of poultry keepers and good management always keeps them in mind. If you do not



A Very Successful Type of Open-Front Chicken Houses

est facts about egg production; feeding mixtures and costs are not shown in the monthly reports.

The report gives the pen total for 100 pens of ten each, 1,000 fowls. The seventh contest opened November 1, 1917, and closed October 30, 1918. The first place was won by a new breed, Oregons. Then 10 pullets of this breed laid 2,352 eggs—an average of 235 eggs per hen. This is a splendid record and this new breed wins honorable mention for the faculty at the Agricultural College, Corvallis, Ore.

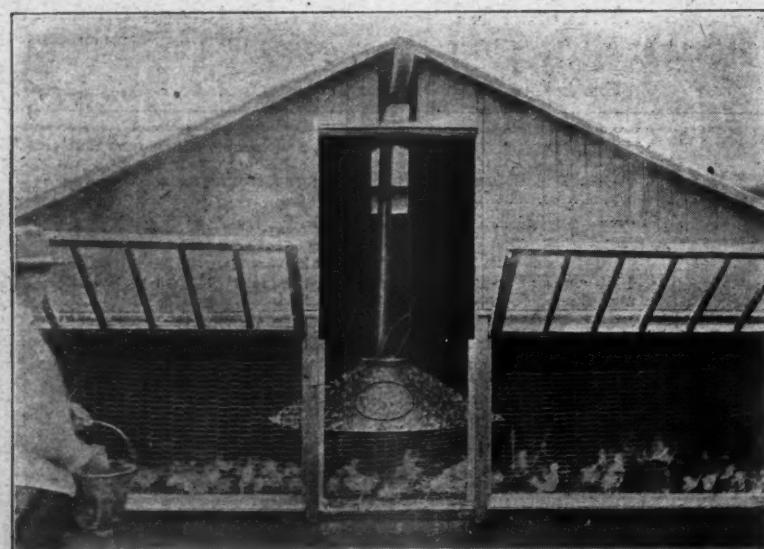
Taking the 1,000 hens of the contest the average is 158 eggs. The Oregons averaged 17 eggs in October and one of the pens did not lay an egg. But one laid 24 eggs.

A White Wyandotte pen won the second place with a record of 2,179 eggs. The lowest pen was also a White Wyandotte pen, 989 eggs. This difference in production in the same breed is probably due to a mistake in selection. The owner perhaps has many better fowls at home. When we reflect that these pens were carefully selected by

the condition of the hen that laid it and the male bird that was running with the female.

If hens are used for brooding the chicks in a coop with a board floor for the first few weeks, for the hens will scratch up the floor, and perhaps kill the chickens down so, besides making holes for them to get into. And it is extremely important when using hens to keep them free from vermin. They should be dusted with good insect powder or with fresh Penicillium powder from the drug store and it is well to rub a tiny bit of lard or vaseline on the head of each chick to kill the head lice.

One reason why brooders have become so popular is, no doubt, that the chicks confined in them are free from lice. This is a great advantage, for then the birds grow faster and less work is required in caring for them. Sometimes the statement is made that it is easier to raise chicks with a hen than with a brooder, but that is a great mistake, unless the number of chickens is very small.



A Well-Built Brooder House Is a Profitable Investment

want immature, non-laying pullets on your hands from fall to midwinter, make up your mind right now not to carry over a single pullet hatched earlier than the middle of March nor later than the last of April.

Current Prices for Eggs

The forecast of a dollar a dozen for strictly fresh eggs has turned out to be correct. Storage eggs have sold at retail for 80 cents. As these eggs went into storage at about 80 cents the factors ought to be able to worry through the winter.

tain breed in face of the fact that the breed they have needs the feed.

No experienced poultry keeper would contend that the breed should never be changed because, everything being equal, one is most likely to succeed with what he likes best. If one fancies a particular color or type or style in fowls, there is no good reason why he should not indulge that fancy. But he is frankly cautioned not to imagine that color, type, or style is the be all and end all of poultry keeping. The production of eggs is a physiological function

careful breeders, we can understand to what extent the good and the bad may be of the same flock.

The lowest pen, which averaged 98 eggs per hen, would have been an expense on the average farm simply because it would not have received a balanced ration. The best pen would have fallen far below its record under average farm conditions. There is no reason for believing, however, that egg production under farm conditions may not be as high as at experiment stations. The methods of care and mixtures for feeding are freely and gladly given out by the experiment stations. Indeed, these

in the year, of course, a hen can be turned loose with a flock but so long as the weather is cold or wet and when a considerable number of birds are to be raised, an artificial mother is much to be preferred to a lot of hens.

When chicks are to be removed from an incubator to a brooder the latter should be well warmed in advance, the temperature being run up to 90 degrees. After the chickens are put into the brooder they naturally increase the heat and the thermometer should register from 95 to 100 degrees the first week, after which it may be decreased at the rate of five degrees a week.

Yellow Transparent Orchard of Ed. Stoner, Dayton, O.



Yellow Transparent Orchard of Ed. Stoner, Dayton, O.

for January, 1919

Got 117 Eggs Instead of 3 Says One of Our Customers

Any poultry raiser can easily double his profits by doubling the egg production of his hens. A scientific tonic has been discovered that revitalizes the flock and makes hens work all the time. The tonic is called "More Eggs." Give your hens a few cents' worth of "More Eggs," and you will be amazed and delighted with results. "More Eggs" will double this year's production of eggs, so if you wish to try this great profit-maker, write E. J. Reefer, poultry expert, 3651 Reefer Bldg., Kansas City, Mo., for a \$1 package of "More Eggs" Tonic. Or send \$2.25 and get three regular \$1 packages on special fall discount for a season's supply. A million dollar bank guarantees if you are not absolutely satisfied, your money will be returned on request and the "More Eggs" costs you nothing. Send for your "More Eggs" today or ask Mr. Reefer for his free poultry book that tells the experience of a man who has made a fortune out of poultry. One of our customers says, "More Eggs" increased my supply from 3 to 117 eggs."

Poultry Raisers Write From All Parts of U.S. Wonderful Results of "More Eggs"

Five Times as Many Eggs Since Using "More Eggs" Tonic

Since using "More Eggs" do not think there is one chicken that is not laying. We get from 40 to 50 eggs per day. Before using "More Eggs" we were getting 8 and 9 eggs per day.

A. P. WOODARD, St. Cloud, Fla.

"More Than Doubled in Eggs"

I am very much pleased with your "More Eggs" Tonic. My hens have more than doubled up in their eggs. L. D. NICHOLS, Mendon, Ill.

126 Eggs in Five Days

I wouldn't try to raise chickens without "More Eggs," which means more money. I use it right along. I have 33 hens and in 5 days have gotten 10½ dozen eggs or 126.

Mrs. J. O. OAKES, Salina, Okla.

15 Hens—310 Eggs

I used "More Eggs" Tonic and in the month of January from 15 hens I got 310 eggs.

Mrs. C. R. STOUGHTON, Turners Falls, Mass.

75 Per Cent Layed Every Day

The "More Eggs" I ordered from you last winter proved out very satisfactory. Fully 75 per cent of my hens laid every day.

H. C. RADER, Greenville, Tenn.

160 Hens—125 Dozen Eggs

I have fed 2 boxes of "More Eggs" to my hens. I have 160 white Leghorns and from March 25 to April 15 I sold 125 dozen eggs.

Mrs. H. M. PATTON, Waverly, Mo.

Write Today

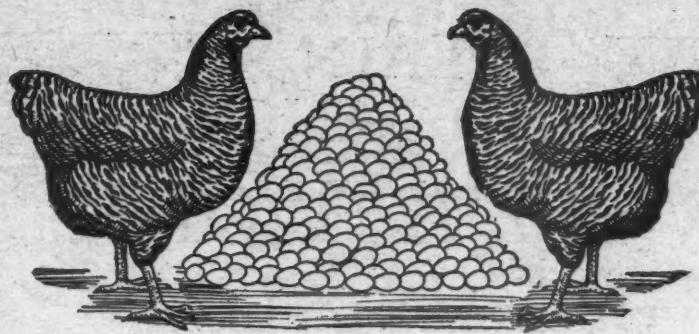
Send this coupon today to E. J. Reefer, the poultry expert, 2499 Reefer Bldg., Kansas City, Mo. Send \$1.00 now for a full sized package of "More Eggs" Tonic; or better yet send \$2.25 at extra special discount, and get three packages, a full season's supply. Don't put it off. Remember, you run no risk. A million dollar bank guarantees satisfaction. At least ask Mr. Reefer to send you FREE, his valuable poultry book that tells the experience of a man who himself has made a fortune and is helping others to make money out of the poultry business. Pin a dollar bill to the coupon. Or send \$2.25, which will guarantee your winter's egg supply. Send for this bank guaranteed egg producer NOW, today! It has helped thousands of others and will help you, too.

E. J. Reefer
3651 Reefer Building
Kansas City, Missouri

Enclosed find \$..... Send a special discount price, with all charges prepaid..... packages of "More Eggs" Tonic. Send this with an absolute Bank Guarantee that you will refund all my money if this tonic is not satisfactory to me in every way.

Name.....
Address.....

IMPORTANT: If you don't want to try this Bank Guaranteed tonic, at least mail the coupon for my free valuable poultry books FREE.



Poultry Authority Makes Prediction

It is my opinion that this is going to be the largest year that poultry raisers have had. I predict that eggs are going to retail for \$1.00 a dozen this winter. I base this prediction on the fact that right now eggs are selling at 65c and 75c in some of the large cities.

This means \$1.00 a dozen for eggs by the first of the year, if previous seasons can be taken as a basis of calculation.

The poultry raiser, amateur and professional, who gives his poultry business his serious attention, this winter, and who spends a little money on the upkeep of his hens, is going to cash in, in a way never before dreamed of.

As America's foremost poultry expert, the foregoing are my serious convictions.

E. J. Reefer.

Gets 45 Eggs a Day Instead of 2 or 3

"Increase to 45 Eggs a Day"

Since I began the use of your "More Eggs" Tonic, two weeks ago, I am getting 45 eggs a day, and before I was only getting 2 or 3 a day.

DORA PHILLIPS, Derby, Iowa.

"Finishes Moult—Lays Quick"

Reefer's "More Eggs" Tonic did my old hens good, for as they got through moulting they began laying.

E. G. MC CALL, Williamsburg, Pa.

"Doubled Eggs in Canada"

I am very much pleased with your "More Eggs" Tonic, as my hens have more than doubled their eggs.

MRS. ANDREW FALK, Vanarsdol, B.C., Can.

"Gets Winter Eggs"

It is the first time I got so many eggs in winter. When I began using "More Eggs" I was only getting from 1 to 3 eggs per day and now I am getting 11 to 13 eggs per day.

MRS. JULIA GOODEN, Wilburton, Kan.

"Plenty of Eggs Now"

I have been using Reefer's "More Eggs" Tonic for three weeks. When I started our hens were only averaging us 1 egg a day out of 100 hens, and we are getting plenty of eggs now.

T. E. TATE, Armored, Ark.

"Astonished the Neighbors"

Am well pleased with results of "More Eggs." As I took my eggs in to the store today, people asked where did I get all those eggs.

H. J. WESTFALL, Lenora, Kan.

"Tripled Egg Production"

About one month ago I ordered 1 package "More Eggs" Tonic. I have been giving it to my hens and they have tripled my egg production.

I am sending you a postcard photo that I made on January 13, 1918. Those two full buckets, as you see, of eggs were gathered from a flock of 25 hens in ten days.

O. F. MURPHY, Glen Rose, Tex.

"More Eggs" Makes \$300"

I used "More Eggs" Tonic during the winter. I was able to sell \$300 worth of eggs in 1917. Good record.

JOSEPHINE BEVAR, Derby, Iowa.

"Selling Eggs Now"

I was not getting an egg when I began the use of the "More Eggs" Tonic. Now I am selling eggs.

MRS. J. F. BRINK, Hebo, Ore.

"Hens Were Transformed"

I never saw such a transformation as in my hens since giving them "More Eggs". They have recovered from the disease and are laying straight on every day.

Mrs. T. T. BANES, Fayetteville, N. C.

"More Eggs" Makes \$300"

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JOSEPHINE BEVAR, Derby, Iowa.

Eggs Paid the Pastor

I am so thankful to you, Mr. Reefer, that I can't express in words how much I have been benefited by your "More Eggs." As to eggs, I've got more eggs than I ever did, and am highly pleased with everything that I bought. My friends are now waking up when I tell them that "More Eggs" is the remedy for me. I've paid my debts, clothed the children in new dresses, and even bought John a new shirt—and that is not all—I paid my Pastor his dues, and have money to help those who have never heard the old story of "Jesus and His Love," and as I write this beautiful morning, the cackling of the hens are praising "God from Whom all blessings flow." I can safely say your Roup Remedy is all O. K.

MRS. LENA MC BROOM, Woodbury, Tenn.

EGGS \$1.00 A DOZEN

Demand Greatest in History
Eggs and Poultry to Stay
At Top Notch Price

Higher Now Than Any Time
Since the Civil War—All
Poultry Raisers to Profit

At no time in the history of the country since the Civil War have eggs and poultry been in such demand. It is reported by all the large cities that the cold storage supply has been just about exhausted by the enormous demand made by the European powers. It is estimated that a million cases of eggs have been exported since the first of September and unless dealers in cold storage can get immediate new supplies, it is predicted that eggs will bring a dollar a dozen by January, and that fattened poultry will bring from 30 to 40c a pound killed. Right now, fresh eggs are selling at 65c a dozen in such cities as Philadelphia, Baltimore and New York, and it is predicted they will sell for \$1.00 by the first of the year.

These top notch prices have excited a great deal of activity, not alone in the markets, but among the small poultry raisers and among the farmers' wives, who raise fowls. One man who raises poultry on a large scale has contracted to supply a New York hotel with guaranteed fresh eggs from now till Feb. 1, at 60c a dozen and fattened fowls at 35c a pound dressed. He says these prices will be obtained very easily and that the ordinary poultry raiser could double and treble his profits, if he would keep his fowls toned up with a good laying tonic and keep roup out of the flock. These are two simple precautions and with the present outlook anyone who neglects these things is simply robbing himself of just so many dollars per week.

It is also stated on authority that cold storage dealers as well as all large buyers are now demanding fowls that are in perfect condition on account of the huge export trade in these stocks and when they are barreled and sent abroad they have to be in prime health and those eggs also are in heavy demand which are being sold on a guarantee of being absolutely fresh. This is going to be a great year for the poultry raiser, both large and small, and various sources already report more scientific care and study of fowls, due to the above mentioned rigid demand and the enormous call at big prices for perfectly fresh eggs and fattened fowls. With the advent of cold weather, there will be a loud call for eggs at fancy prices.

Keeping the hens toned up and in good laying condition is going to pay the poultry raiser better this winter than ever before.

160 Hens—1500 Eggs

Mrs. H. M. PATTON, Waverly, Mo., writes, "I fed 2 boxes of 'More Eggs' to my hens and broke the egg record. I got 1,500 eggs from 160 hens in exactly 22 days." You can do as well. In fact, any poultry raiser can easily double his profits by doubling the egg production of his hens. A scientific tonic has been discovered that revitalizes the flock and makes hens work all the time. The tonic is called "More Eggs." Give your hens a few cents' worth of "More Eggs," and you will be amazed and delighted with results. "More Eggs" will double this year's production of eggs, so if you wish to try this great profit maker, send one dollar to E. J. Reefer, poultry expert, 3651 Reefer Bldg., Kansas City, Mo., for a full sized package of "More Eggs" or send \$2.25 on special discount for 3 regular one dollar packages—a full season's supply. Remember a million dollar bank guarantees to return your money if you are not perfectly satisfied. You run no risk—send for your "More Eggs" today or ask Mr. Reefer for his valuable poultry book free that tells the methods of a man that has shown thousands how to make money out of poultry.

PLAIN AND FANCY NEEDLEWORK

Openwork on Linen

Designs by Mrs. Nellie Barnes — Text by Rose Angell

THE SPINNING of flax into threads and weaving them into a linen fabric has been a favorite feminine occupation since the earliest days of history. Homer in *The Odyssey* relates that Penelope awaits the return of the wandering Ulysses, passing her time in weaving a wonderful garment, and promising her suitors to listen to their pleas when it is complete! And every day she weaves a length, unraveling it at nightime, so the garment is never finished and she waits her lord's return undismayed.

In early days linen was even scarcer and more valuable than it is today when the Irish flax industries can barely supply the needs of the Allied armies, and civilians must turn to cotton and silk as substitutes. It is a matter of historic record that the D'Oyley family—in the days when Norman kings ruled England—gave, each year, for tenure of their estates, a goodly gift to the King, of table linen, spun and embroidered by the fair hands of the ladies of the D'Oyley family—"pieces of fyne linenne, broidered and of fayre designe;" and through the centuries, their name has clung. The "dolily" of today is but a variation of the "D'Oyley" linen which adorned the tables of generations of English kings.

The simplest method of decorating linen and rendering it more beautiful and valuable was, of course, by "drawing" the even linen threads in a variety of ways and filling in the spaces with stitchery arranged in different combinations of design. The Italians differentiated between two methods of drawing the threads. In "Punto tirato" either the warp or woof threads only are drawn; in "punto tagliato" both warp and woof threads are drawn, and Italian pieces have long been famous for the beauty and originality of their patterns. Exquisite specimens of this work, yellow with age, but eloquent of the industrious fingers which fashioned them, still exist among the treasures of collectors. And not only table linen but garments of all kinds, from infants' robes to the alb of his Holiness the Cardinal were decorated in this manner.

The illustrations on this page were taken from specimens of drawn-thread work made in the West Indies, and closely allied to the Mexican product. This art has always flourished in countries which were once under Spanish rule, and it is likely that the nuns from Spanish convents brought these designs to foreign lands in the days of Ferdinand and Isabella, as specimens from the Philippine Islands, from Argentina and the West Indies show strong similarity.

The foundation of these patterns is fine linen or cotton fabric with threads woven as evenly as possible. On the evenness of the threads depends a great deal of the beauty and regularity of the finished pieces, as it is considerably easier to work with even, rounded threads which are somewhat coarse than with fine ones.

The materials needed are very simple, just needle and thread and a very sharp and finely pointed pair of embroidery scissors, so that the threads may be evenly cut. This last is very important.

Whenever threads are drawn and the edges cut, these raw edges should be carefully buttonhole stitched to prevent the threads from running farther through the fabric.

All the patterns shown on this page, with the exception of that in the right-hand upper corner are decorated with a darning stitch on a plain ground of drawn-thread squares. Four threads are drawn out, and four left for each bar, and the threads which form the bars are pulled together by overcasting to strengthen and hold them in shape.

4 threads and cut 4 until you have 25 cut groups of 4 and 24 groups of 4 uncut threads. This brings you to the top of the pattern. Now cut 4 threads of the woof. Leave 4, cut 4, leave 4, cut 4, leave 4, and cut 4. This gives you 5 cut groups and 4 groups of uncut threads. Now work down from the top on the right side. Cut 5 groups of 4's and leave 4 groups. (You are now beginning the second "step" of the pattern.) Working to the right, leave 5 groups and cut 5. Working down, cut 5 and leave 5. Repeat this until you are at the bottom of the 5 "steps." For the bottom working toward the left, cut 25 groups of 4 and leave 24. You are now at the point where you began. Now pull out all your cut threads and, if you have counted the threads correctly, you will find you have a crossbarred effect of alternate spaces and threads.

Taking a fine needle and thread, overcast these bars lightly with about 2 stitches over each square (this holds the 4 threads together) and buttonhole stitch the edge of the pattern all around. Your groundwork is now complete.

The little squares which are in the "steps" at the right side are made by working a fine thread over the bars which form each individual square in a loop stitch.

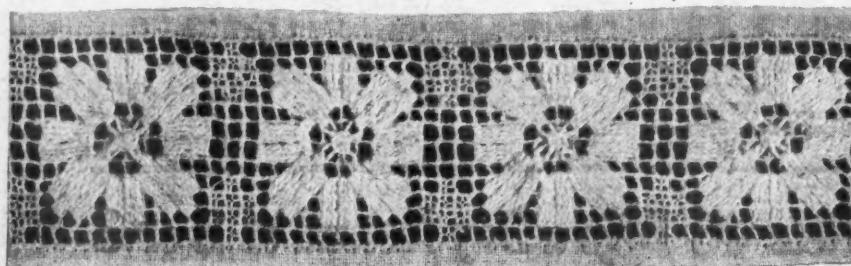
The bird is made by darning the squares over and under the bars, 4 threads to a bar and leaving one square for the eye.

It is always well to work round the entire ground first, cutting and leaving the desired threads, and sometimes it may help you to pencil the outline before beginning to cut. Remember that the cutting of drawn-thread work is the part which requires most scrupulous care. After cutting and drawing the threads, the rest is comparatively easy.

For the circular part of the baby cap, beginning at the left side, cut 4 and leave 4 until you have 10 cut groups. Then, counting 184 threads to the right cut the opposite threads. Count 92 threads above and below center of circle. Cut 8 groups of alternate cut-and-left threads at the top and bottom and graduate the sides to meet these and make the circle complete.

The design at the top right-hand corner is quite elaborate and should only be attempted after the beginner has had considerable practice with the others. Where the spider web appears, both the warp and woof threads are cut away entirely and the space filled in with the woven pattern.

As stated before, drawn-thread work may be used to decorate a variety of articles. The simplest centerpiece will be enriched by its use, while pillow tops, table scarfs, or towels may be adorned in the same way. On coarse materials the decorative spider webs and darning are very pretty worked in contrasting colors; in fact, it only needs a little fore-thought to discover wide fields of interest and invention in connection with this fascinating handicraft.



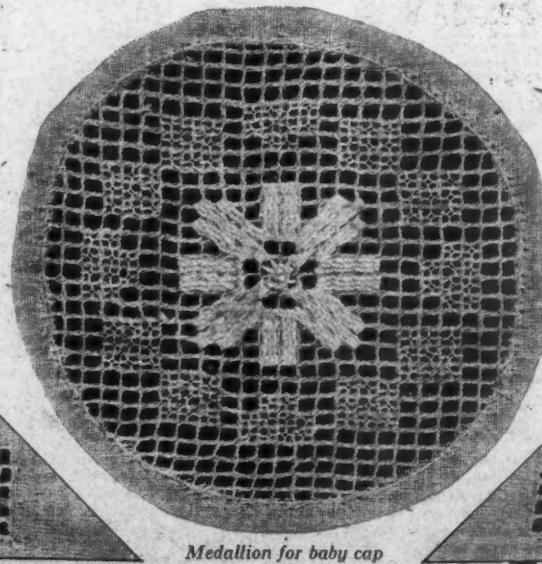
A strip of dainty insertion in floral design for baby cap

The entire groundwork of every design should be prepared and finished completely before the darning is begun. The 8-petaled flower in the center of the baby cap is worked with mercerized cotton much coarser than that which is used for the finer square and shows up boldly against the delicate and weblike filling stitch which forms the circle of small squares around it.

The bird and butterfly of the handkerchief borders are darned with fine thread, running the straight way of the mesh and (in the case of the body of the butterfly), diagonally, to give variation in the pattern.

In the right upper corner is a characteristic Mexican design of spiders' webs and squares which will be familiar to every lover of this interesting work. The ground is prepared in much the same way as for the others, except that lines of thread knot the bars together, so that the preliminary work of overcasting them is unnecessary.

To reproduce one of the dainty patterns—for instance, the bird in the left-hand lower corner—the beginner should take a piece of linen the size required and proceed to draw the threads. The threads which run the long way (selvedge) of the fabric are called the warp, the cross threads are the woof. Beginning at the lower left corner with a sharp pair of scissors cut 4 threads of the warp (which in this case runs from right to left of the pattern). Working upwards, leave



Medallion for baby cap

Indoor and Outdoor Fashions for Winter Days

**Afgco
Patterns**



How to Order Patterns

Write your name and address plainly on any piece of paper, give number and size of each pattern you want; enclose 12 cents for each number, money order, stamps or coin (wrap coin carefully), and address your order to American Fruit Grower, 329 Plymouth Court, Chicago, Ill. Safe delivery of all patterns is guaranteed.

9079. LADIES' AND MISSES' COAT—The smart military effect is well carried out in this coat which goes well with plain skirt. Sizes, 16, 18 years, and 36 to 44 bust. The 36-inch size requires 2½ yards 36-inch or 2 yards 54-inch material.

9010. MISSES' OR SMALL WOMEN'S THREE- OR FOUR-GORED SKIRT—Slightly raised waistline. Width at lower edge is 1½ yards. The three-gored skirt in 16-year size requires 2½ yards 36-inch, or 1½ yards 54-inch material. Sizes, 14 to 20 years.

9068. LADIES' AND MISSES' ONE-PIECE DRESS—This is one of the special designs to save material. It slips on over the head and requires only 2 yards of 54-inch material for the entire dress. Sizes, 16, 18 years, and 36 to 40 bust.

9060. MISSES' OR SMALL WOMEN'S DRESS—The two-piece gathered skirt with straight lower section is joined to an underwaist. The separate blouse may be closed at side-front or on the shoulders. Sizes, 14 to 20 years. The 16-year size requires 2½ yards 36-inch plain material, 1½ yards plaid material, and 1½ yards 36-inch lining.

9067. MISSES' OR SMALL WOMEN'S DRESS—Closing at left shoulder and underarm, with two-piece gathered skirt. Sizes, 14 to 20 years. The 16-year size requires 3½ yards 36-inch material, with ½ yard 27-inch contrasting, and ½ yard 36-inch lining.

8829. LADIES' AND MISSES' SLIP—To be worn with an overblouse or panels. Sizes, 16, 18

years; 36 to 46 bust. The 36-inch size requires 4½ yards of 36-inch goods, with ½ yard 20-inch contrasting material.

9084. LADIES' AND MISSES' SET OF PANELS—Two styles included in the pattern. Sizes, misses' and ladies'. View A requires 3 yards 27-inch, or 2½ yards 36-inch material.

9075. LADIES' AND MISSES' COAT—The raglan sleeves and convertible collar are attractive

features of this coat. It may be cut in 46 or 50-inch length. Sizes, 16, 18 years, and 36 to 46 bust. The 36-inch size in 50-inch length requires 5 yards of 44-inch goods or 3½ yards 54-inch material.

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Orchard Women and the Home

Lessons of Influenza

A HARD lesson has been taught us by the ravages of influenza. While the dread disease has visited high and low, alike, we know that it would readily have been checked if the proper precautions had been exercised everywhere upon its first appearance. The homes of ignorance were the ones where no precautions were taken, and from which the contagion was spread in all directions.

When we compare the ravages of this disease with the mortality caused by war, we stand appalled to find that many hundred times the number have died in the United States from influenza as died over there from casualties among our men in the field—350,000 deaths up to date of December 3, was the official statement, but since then many more have been added.

This will surely open the eyes of our women to the need of an educational campaign as regards the rules of health. Many who read these lines, will know most bitterly, through personal experience, of the loss of loved ones, how heavy the hand of death has been through the spread of this plague.

Letters on Wings

NEXT time you go to your R. F. D. box, pause a moment to think that it may not be many years before the whistling wings of the aviator may sound over your orchard as the aerial mail carrier speeds overhead, perhaps dropping your particular package of mail. Already New York and Chicago are corresponding by mail air routes. Perhaps the more timid of us, among whom the writer stands unashamed, may in our lifetime find that the "plane" is fully as safe as the more familiar railroad train or automobile. Some enthusiasts appear to think it is so already, but most of us prefer to trust ourselves nearer the ground, and our autos will give us all the thrills we need for the present.

In this connection we are glad to know that, with the end of the war, the restrictions have been lifted from the manufacture of pleasure cars. Even if we are not lucky enough to own one, we are well-pleased when our neighbor gets his, for, if he be worthy of the name "neighbor" we shall have many a fine ride.

Hot School Lunches

WE WANT to suggest a thought to the women of the fruit growing sections now that the weather is severe and the children come in from school cold and tired. This is the advantage of the hot lunch for the children in rural schools. At first sight it may seem too difficult, but it has taken firm root in many localities and why not in yours? It would be a splendid work for the school leagues to make this innovation. Very simple fare is advocated, so that five cents would cover the cost of any single portion, whether hot soup, milk, cocoa, macaroni, potatoes or other dishes. At first the

plan might be tried out by simply furnishing a hot drink. After the initial expense of providing dishes and cups is met (and all orchard women know how to set about raising money) the next question will be to find time for preparing the meal. A fireless cooker would be a great help. The money from the lunches could be put into purchasing supplies for future lunches, and if the demand for them is heavy, it might easily be possible to find someone living sufficiently near the school who would undertake to run this simple little cafeteria for the children. This would relieve the situation to the extent of disposing of the question of finding time to cook and serve the lunch. We think the larger girls would gladly do their bit by helping serve the smaller children, filling their plates or cups.

The teachers would be well rewarded by the added brightness of the pupils, and the children would show the effect in increased vitality and resistance to colds, etc. All the parents should be solidly behind such a movement or it would result in failure.

Home Demonstration Agents

THE HOME demonstration agent has her critics as well as her warm allies. So has the county farm demonstrator, but we know that it is not the fault of the institution if good results are not obtained through these agents. If they fail it is either because they are unfit for the position or because the people they work among are hopelessly indifferent to the aid that is offered them. A patriotic work on the part of the home demonstrator and the work of Polk County, Ore., resulted in the saving of several hundred dollars that went into Liberty Bonds. The agent taught the housewives to make for themselves, at small expense, such household helps as fireless cookers, iceless refrigerators, and stove fruit driers. Thus time, labor and fuel were conserved and money saved to put into bonds.

The Rural Church

THE WOMAN who is alive to the best influences for her community will not forget to take into account the rural church and its effect on the social as well as the religious life of the place.

Have you heard or read of the little Olive Chapel Baptist Church at Apex, N. C., which has been called the "Ideal Country Church?" A lot has been written about it which makes very interesting reading full of suggestive thought. The most striking facts are that this little country chapel was poor, poorly attended, poorly conducted, when William S. Olive, the first boy of the community who ever went to college returned home to fill its pulpit.

He and his wife are given full credit for building up a modern and beloved institution, which not only gives all the spiritual and friendly aid possible, but which so interests itself in the social life of the whole com-

munity that all entertainments find their source in the activities of the church. Healthful and simple pleasures, picnics, parties, tennis, etc., are inaugurated here, and the young people not only gladly spend their holidays at home but remain there through later life. Not a single illiterate child of school age is to be found, and normal schools and colleges receive the older pupils. The record of those young people who have been called to outside work, such as enlisting in the army, is unusually fine. The history of this little church is an inspiration to all rural churches.

Teachers After the War

THIS is going to be a year of unusual interest to the orchard woman. Last year was one of excitement, of anxiety, of self-denial and many perplexities. The energy developed during this season of stress showed many that they had more in them than they themselves suspected. This year they will be called upon to use these energies in a happier way. The problems of reconstruction spring up on every hand, and according to the spirit in which we solve them depends our own and our country's happiness.

It may seem that the orchard sections will not be closely touched by these problems, but you will soon find that this is not so. For instance—your school has likely suffered like the rest from the great dearth of good teachers. Not the men alone answered the war call. Thousands of women devoted their services to the government, and it is one of the depressing puzzles of the time to know what to do for these devoted servants of Uncle Sam, whose places will in many instances be taken from them by the returning soldiers.

In a large number of cases these women sacrificed a great deal to become more directly useful to their country, but having made the sacrifice it is very difficult for them to return to the old position. Very many teachers left that ill-paid profession for more remunerative occupations. So acute was the situation, even in the colleges and universities, that a school board was established in the United States Bureau of Education to assist all officers of education who were seeking teachers.

The schools were left in a distressful condition, and it was strongly felt that better pay must be given in order to secure and hold the proper instructors. Doubtless a number of women who abandoned teaching for the period of the war, will return, refreshed by the change, and this is matter for sincere congratulation for the rural schools. But remember, they now know their worth in other departments, and if things are not made easier for them, or if the community in which they work does not make life pleasant for them outside of school hours, there will be no particular reason for them to stay, and your children will be the sufferers. Here's something for you to work on in this year after the great war.



The New and Easier Way to Better Housekeeping

DO away with housekeeping drudgery. Do away with back breaking, stooping, stretching, bending and climbing. Get an O-Cedar Polish Mop.

With it you clean, dust and polish all at one time. Use it on the floors, on oil cloth and linoleum, too. Also for reaching the tops of doors and other high places. The O-Cedar Polish Mop makes housework a pleasure.

O-Cedar Mop Polish Mop

does away with hard work. It gives a hard, dry, lasting lustre to hard wood, painted or varnished floors.

Sold on Trial

Simply deposit the price — \$1, \$1.25 or \$1.50 with your dealer, for an O-Cedar Polish Mop on trial.

If you are not delighted with the work it does, and the time it saves, your money will be refunded without a question.



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SPRAY YOUR FRUIT TREES AND VINES

Destroy the fungi and worms and thus be sure of large yields of perfect fruit.
Excisor Spraying Outfits and Prepared Mixtures are used in large orchards and highly endorsed by successful growers. Write for our money-saving catalog, which also contains a full treatise on spraying fruit trees and vegetable crops.
W.M. STAHL SPRAYER CO., Box 74, Quincy, Ill.



Destroy the fungi and worms and thus be sure of large yields of perfect fruit.

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Kindly Mention American Fruit Grower when writing to Advertisers

Makeshifts in Fruit

By Sylvanus Van Aken, New York

The homemaker and would-be fruit grower is so constantly tempted to purchase novelties, that he needs to have a clear understanding of his own needs, not to get besotted with the claims of merit made for so many varieties not adapted to his situation.

Nobody nowadays will plant crab-apples, where plenty of real apples can be grown. And nobody should plant poor sorts of fruit with their only recommendation hardness, in places where hardness is not the chief consideration.

Who does not remember the rage for Juneberry and the Rocky Mountain cherry a few years ago. They were recommended and sold largely as good fruits and hardy enough for any place.

The last claim is very true. They are ironclads away up to the northern limits and that is the only place where they are needed. In all the extensive regions where cherries and raspberries can be grown, there is no use for the extremely hardy, except as makeshifts for a few years, while you are growing shelter for the better sorts. Many a man has planted Juneberry on the strong recommendation of a nursery salesman, only to find that when they came into bearing, there was no sale for the fruit. Or, if it could be sold at all, it was at a price that hardly paid for picking and boxing.

Another makeshift which has a possible place in new sections and frontier farms, where nothing better is to be had for a time, is the Garden Huckleberry, or Wonderberry. There are two or more forms of this rather new introduction. Very few people care for them when they are supplied with standard fruits as the strawberry, raspberry, currant and grape. Their only claim is that they are much better than no fruit.

Go light on the makeshifts in fruit culture.

TOO MUCH HEAT—FLAT FRUIT JUICE

The flat taste of bottled fruit juice, especially of grape juice, is caused by too high a temperature in the sterilizing process.

Many fruits change their flavor markedly on boiling, especially strawberries, raspberries and grapes. Such fruits, and preferably all fruits, should be pressed cold to remove the juice, or at most should not be heated to more than 140 degrees Fahrenheit. The juice so obtained should be put immediately in sterilized bottles or mason jars, the bottles fitted with a firm cotton plug and the jars with rubbers and covers. The containers should then be placed in boilers or kettles, and water should be poured in up to the neck of the bottles and heated at 165 degrees Fahrenheit for 40 minutes. This temperature must not be exceeded. A thermometer is a necessity here. At the end of the period sterilized corks should be pressed quickly into the bottles over the cotton plugs, and the covers of the jars should be screwed on tightly. The bottles and jars should both be inverted to test for leakage.

In case juice is being canned for the making of jelly later in the winter it should be boiled else it will not contain any pectin, the material which causes the jelling. Since these juices will be boiled again in making the jelly they can be sterilized in bottles and jars in boiling water, instead of at 165 degrees.—J. J. Willaman, plant chemist, University Farm, St. Paul.

NEW CREATION IN PLANT LIFE

By W. S. Harwood

You will guess from the title that this book has to do with Luther Burbank, who is the master creator of new forms of plant life. Mr. Harwood has presented his subject most sympathetically both as regards the man and his work, and no fairy tale has a more magical touch than these true descriptions of the marvels that have been accomplished by this brilliant scientist and most lovable and simple-natured man.

The illustrations lead one delightfully into the land of wonders, and we close the book with a sigh, wishing that its 450 pages might be doubled.

Published by the McMillan Company, 66 Fifth Ave., New York City, and can be purchased from the AMERICAN FRUIT GROWER for \$2.00.

Sonderegger's Acre Orchard

Fruit is scarce and high-priced and will go higher, for America is not raising enough to supply our needs. Plant an acre orchard this year and you will never regret it. It will soon give you plenty of fruit for your own use and some to sell. The following trees and plants may be planted in a space of 330 feet by 150 feet.

55 Apple Trees, 3 to 4 ft.	\$9.90
15 Cherry Trees, 3 to 4 ft.	4.80
20 Peach Trees, 3 to 4 ft.	4.40
15 Dwarf Pears, 3 to 4 ft.	4.20
15 Currants, assorted	2.25
15 gooseberries, assorted	2.25

62.50

Entire Orchard delivered at any railroad station in America for only \$26.00.

Where peaches are not grown successfully, plums or compass cherry plums could be substituted. I will help select your varieties, choosing the right kinds for your climate. In one year you will have currants, in two years currants and gooseberries, and in three years cherries, pears and peaches. Everything guaranteed to reach you in good condition. Try this orchard and you will be satisfied.

All kinds of trees and seeds at wholesale prices. Write for free catalog.

SONDREGERG NURSERIES AND SEED HOUSE
31 Court Street, Beatrice, Nebraska

Trees and Seeds That Grow

Grow Trees That Bear



Trees from the Woodlawn Nurseries are vigorous growers and breed-to-bear. Over 40 years successful growing experience has been devoted to the production of thrifty strong rooted stock. We have the exclusive sale of the famous "Dr. Worcester" Peach.

The same time-proven dependability makes Woodlawn grown shrubs, flowering bushes and perennials safe investments. The moderate prices bring an individual and attractive garden within the most moderate means.

Special Fruit Garden Offer. We offer a total of 149 plants, sufficient to supply the needs of one family, at a special combination price. All the plants are sturdy Woodlawn stock and require less care than vegetables. Write for full particulars.

Our illustrated 1919 Nursery List contains valuable planting and growing information as well as a catalog of select nursery stock. Mailed on request.

WOODLAWN NURSERIES

883 Garson Ave., Rochester, N.Y.

Apple and Peach Trees

Great Stock at Right Prices

Our immense stock of true-to-name apple and peach trees includes all varieties. We take care of big orchard requirements. No order too small for careful attention. Do not fail to write us your needs. We have a good supply of pear, plum, cherry and quince trees, also small fruits, berry plants and grapevines, ornamental plants, shrubs and trees. The great Rochester peach, everywhere a favorite, is our specialty. 500,000 Cornican strawberry plants. Send for catalog.

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DINGEE ROSES

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Pot-grown rose bushes, on own roots, for everyone anywhere. Plant any time. Old favorites and new and rare sorts, the cream of the rose world. "Dingee Roses" have been the best for 67 years. Safe delivery guaranteed anywhere in U.S. Write for a copy of our "New Guide to Rose Culture" for 1919. It's FREE.

Illustrate wonderful "Dingee Roses" in natural colors. It's more than a catalog. It's the lifetime experience of the Oldest and Largest rose grower in the world. A valuable work on rose and flower culture for the amateur. Offers 500 varieties. Roses and other plants, bulbs and seeds and tells how to grow them. Illustration from the 1860 "Dingee's Greenhouse."

THE DINGEE & CONARD CO., Box 152, West Grove, Pa.

PLANTS—SEEDS—ROOTS

Complete assortment of hardy Northern grown Berry Plants, Garden Seeds and Roots. Strictly first class. True to name. Prices reasonable. Catalog sent FREE.

A. R. WESTON & CO., Bridgman, Mich.



BEAUTIFYING THE HOME & GROUNDS

By Mary Lee C. Adams



YOU PROBABLY think it poor fun to garden in January, when the only bloom to be seen is in the children's cheeks, not to mention the roses on the noses of those who venture out. Even the shrubs are half buried under snow, and as for the flowers, they lost their heads long ago when that Hun, Jack Frost, nipped them off. We can only hope they are managing to keep the spark of life in their toes under a good warm mulch.

Indeed, if we had to stand in the wind and dig in the frozen earth, we might readily start up a fresh infection of "Flu," but a good part of gardening is done in the mind, and can be carried on comfortably by a cosy fireside.

With a nursery catalogue, pencil and paper, and (if by any means possible) a sympathetic companion to enter into your plans, you may spend many a long, happy evening, and for every hour you devote intelligently to this garden on paper, you will have your reward through the coming growing season.

Christmas preparations are off your hands, even the women have let up a bit on knitting, and the demands of the farm are not insistent, so perhaps husband and wife may together find time to plot expectantly for the summer beauty of their home. Men love flowers quite as well as women do, and it is significant that when we say a "gardener," we think of a man.

Reading a nursery catalogue is sometimes as tantalizing as taking a light purse into a wonderful store. One wants the first thing seen, and everything after that we simply must have. It is almost impossible to pass anything by. The descriptions of shrubs and flowers are so wonderfully alluring that our fancy revels in fairylands of bloom.

But here we must sternly call common sense to our aid. Much can be accomplished with a small amount of money, and we shall begin cheerfully to narrow our choice when we consider certain points.

Is our climate suited to a certain plant? Does it demand more care than we can give ourselves, or than we are able to afford paying someone else to give? For how long a season does it flower, and is it unattractive when out of bloom?

Flowers at All Seasons

Most amateur gardeners forget to plan for a succession of bloom. If you are one of those who live at home but a few months of the year, it is very well to have a riot of bloom for the short time you stay, but most of us orchard people stick pretty closely at home, and we want to plan something to gladden the first day of spring as well as to give a gleam at the last late fall flowering, and even something which will make a brave show in the very depth of winter.

At this season your rooms may still be bright with the Christmas decorations of holly and mistletoe. If you have been wise and planted Japanese barberry about the foundations of your house, there are sure to be some brilliant red sprays of berries showing above the snow. We can hardly appreciate in the abundant wealth of summer, how much a touch of color will mean to us when the earth is shrouded in white, or when it is all gray and brown.

Lately a real study has been made of shrubs in connection with the color of their stems, and plantings of shrubs are designed with a special eye to the bright effect of the stems in winter, as well as for the beauty of the summer bloom.

Have a Definite Plan

Start out carefully, methodically and sensibly, and though you cannot order everything you want at once, you will year by year approach your ideal, and there will be the brightness of nature about you on every day of the calendar.

Unless you are just starting life on a new place, you are apt to have some perennials and shrubs to begin with. If your means and your command of labor are

limited, by all means stick in the main to perennials and shrubs. It is encouraging to find that many flowers, commonly supposed to be annuals, are in reality perennials. Such are the pansy, the primrose and others.

Why is it that the majority of persons show better taste in dress than they do in planning the home grounds? The cynic might guess that it is because so much more thought is bestowed upon the former, especially by women. But that is not the whole difference. When we get a hat, for instance, we try first one and then another until the mirror (or more likely the milliner) assures us that it looks well.

But when we plant something, we cannot first try how it is going to look two years hence, nor what the effect will be in combination with a group not yet come into flowering. To be successful in laying out our garden we must not only possess good taste, the power to see at a glance what is attractive, but we must exercise the far rarer capacity of being able to "visualize" something that does not yet exist.

You can cultivate this faculty, and it is as important as cultivating the garden itself. Don't just set out a lot of pretty plants regardless of anything but their individual beauty. Picture to yourself how they are going to look together, or in what way they had best be separated. Work out the color scheme carefully. This is easier than one might suppose, for few colors clash in nature, but there are specially lovely color combinations such as pink and white, blue, rose and lavender, etc.

A definite plan for every planting is essential. No matter whether you lay out the plan yourself or have an expert design a planting of ornamentals for your grounds, you should make up your mind just how you want it planted. Don't wait until time to put out the shrubs and then try to arrange it. Figure out carefully just what shrubs should be planted behind and which in front in the shrub groups; also consider the season of bloom, color of flowers, etc.

To all of our subscribers who are interested we have arranged to send a book free on application, which covers very thoroughly the principles of beautifying the home grounds. Describes all leading shrubs, shade trees, flowers, etc., it shows what to do and what not to do in planting the home grounds. With this book at hand it will prevent you making many serious mistakes. There is a right and a wrong way to beautify the home grounds.

Free Planting Plans

To those who would rather have the plan for their home grounds laid out especially for them we have arranged to have plans drawn for any subscriber who requests it. If you have made up your mind you want to beautify your home grounds we would be glad to have you a plan drawn showing exactly where the shrub groups and trees should be planted to get the most artistic effect. This free plan service will insure you of getting a beautiful artistically designed planting for your home grounds or for your local school grounds. If you have made up your mind definitely you want to do something of this kind, we will be glad to have these plans drawn for you. It should always be borne in mind that a landscape planting is an investment—a few dollars put in beautifying your grounds will add immensely to the sale value of your property if you should ever want to sell it.

Outdoor Planting

Next month this department will again consider the outdoor planting which shall insure a pleasing result, and make the most of any given opportunity. We hope that all have kept in mind what we have dwelt on previously, which is simplicity of design. The necessity for not breaking up spaces into little unrelated bits, but for treating the space at our command, whether it be large or small, as a whole.

Trees and shrubs may well enter into the scheme you have in mind for your first outdoor activity, but just now the house seems to call aloud for a breath of spring. What have you done to bring the garden indoors for the winter? There are so many charming plants for pots or window boxes. No one should consent to be left for a single month without the consolation of flowers.

First of all, most people will think of the paper narcissus and the sacred Chinese lily. They have become so popular as Christmas gifts, and make such small demands on our care, not even requiring soil, but living airy upon a mound of pebbles in a bowl of water.

The Chinese lily has the drawback of a fairly overpowering perfume. After a winter spent in California, one can always place that odor, for in mid-February, which is the Chinese New Year, every house servant (and they are mostly Chinese there) presents bowls of blooming lilies to each member of the family. In a walk through Chinatown at that season,

the perfume is so dense that progress is almost impeded, and at every street corner venders stand behind banks of blooming and heavy-scented bulbs.

Read "Primrose" Article

We publish in connection with this talk, a suggestive article on "Primroses," by Sophie Tunnell. A big point in their favor is that primroses are perennial and will flower from year to year, while there is nothing more charming than its abundant and long-enduring bloom.

Hyacinths are favorites for window boxes. The single Roman variety, with its delicate bells, is extremely dainty.

Cyclamen are like gay butterflies with many-hued wings, and bring a sense of lightness and brightness that is most refreshing. By no means forget the ferns. Not only are they charming in themselves, but they set off any flower that is grouped



Japanese Barberry beautiful in summer; beautiful in winter

Japanese Barberry, beautiful in summer; beautiful in winter. A dense low-growing shrub that has small attractive green foliage in the summer time, changing to red and orange color in the fall, with bright red berries that hang on during the winter. An ideal shrub for planting around the front doorsteps or foundation of the house. Hardy everywhere.

with them. A fern dish for the table is easily cared for and adds a most agreeable touch to the dining room.

In choosing flowers for your windows, some thought should be taken for the general color scheme of the room. While few flowers would actually clash with the walls or draperies, because, as we have mentioned, they have a wonderful faculty for harmonizing with each other and their surroundings, yet some combinations are decidedly better than others, and we may push this obliging peculiarity of nature too far, as when we plant a crimson rambler against a red brick house or set a ruby cyclamen against a terra cotta wall paper.

We suggest that the best efforts of the window gardener be directed to the living room. It is generally the most constantly warm room in the house, and in a well-planned home its windows are apt to have a sunny exposure. Moreover, it is the place where the family is most frequently gathered and where guests are received, so the greatest amount of pleasure is given by plants and flowers in this room.

It would take a book to indicate half of the plants suitable for window gardening. A little volume entitled "Milady's House Plants" will be found very inspiring, and we will be glad to order it for anyone who asks us to do so. It is written by Frederick E. Palmer, published by S. R. Delamare Co., 437 West 37th St., New York City. Price, \$1.00.

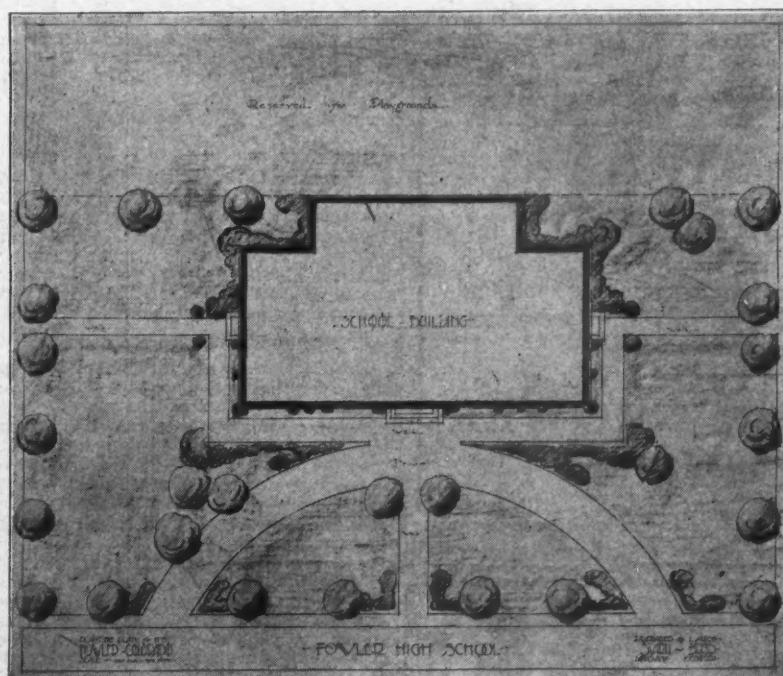
THE CULTURE OF PRIMROSES

By Sophie Tunnell, Illinois

It is rather difficult to raise primroses but one is well repaid for their trouble. The very fine seed must be planted in a large flowerpot in the spring. It is best to use one-third earth and two-thirds sand. This must be very firmly pressed down into the flowerpot. Then the seed is sprinkled on the top, and it must be watered by pinching the pot in a pan of water and allowing the moisture to come up from below.

Transplanting in Box

After the plants have come up they may be transplanted in a shallow box. Here they are left until fall. Then, when placed



Make the School Grounds a Place of Beauty and a Nature Lesson for the Children

The above plan is one designed for school grounds in the State of Colorado. The general design can be adapted to other school grounds equally well. Note the shade trees around the edge of the property and a few on the lawn for shade. Most of the lawn is left open so as to have a wide expanse of green grass while shrub plantings of different seasons of bloom are shown around the foundation of the building and at the entrance of the driveway. What a wonderful chance to make children learn to appreciate the beauties of nature by having many colored flowering shrubs and beautiful shade trees on the school grounds of America. The same thing applies to the home—make the grounds beautiful so the children will love and appreciate their own home. This can be done at a very moderate expense. Write to the AMERICAN FRUIT GROWER for information for getting especially designed landscape plans for school grounds or home. This service is free to our subscribers.



"Some more of those stockings that wear so well"—

More Durable-DURHAM Stockings—the kind that everybody in the family likes so well because they are good looking and long-wearing.

A mother soon learns to know good stockings. She sees where they wear out first. She sees that Durable-DURHAM stockings are extra strongly reinforced at these points of hardest wear.

She learns that money is saved and damping is avoided by purchasing

DURABLE DURHAM HOISIERY

FOR MEN, WOMEN AND CHILDREN
Made strongest where the wear is hardest



This hosiery is not only extra strongly reinforced to make it wear longer but is superior in other ways. Legs are full length and tops are wide and elastic. All sizes are correctly marked. Feet and toes are smooth, seamless and even. The Durham dyes are fast so that colors will not fade from wearing or washing.

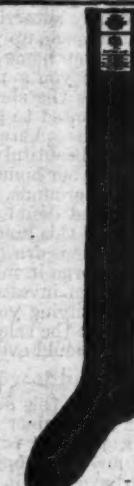
Durable-DURHAM Hosiery includes styles for every member of the family, for work, play or dress, for every season of the year, retailing at 25, 35, 40 and 50 cents per pair.

For coldest weather, Durable-DURHAM Fleece-lined Hosiery gives comfort.

This hosiery is strong and warm, with thick, soft fleece that protects from wintry cold. You should be able to buy Durable-DURHAM Hosiery at any dealer's. If you do not find it, write to our Sales Department, 88 Leonard St., New York, for Free Catalog showing all styles and we will see that you are supplied.

DURHAM HOISIERY MILLS
Durham, N. C.

TAR HEEL
A medium weight sock with 3-thread, strongly reinforced heel and toe. Elastic ribbed top securely knits on. Feet and toes are smooth, seamless and even. Black, tan and white.
Price 25c pair



ROVER LAD
A good medium weight substantial stocking for children. Triple reinforced knees. Strongly double reinforced heels and toes. Feet and toes smooth, seamless and even. Black and white.
Price 40c pair



ALPINE
A warm and comfortable stocking. Double fleecy-lined throughout. Full of warmth and full of wear. Extra wide and elastic flare top. Double reinforced heels and toes. Black only.
Price 35c pair

AN EASY WAY TO SAVE MONEY

Send us the subscription of two of your neighbors or friends for one year at 50c each, one dollar in all, and we will extend your own subscription for one more year.

AMERICAN FRUIT GROWER
329 Plymouth Court, Chicago, Ill.

Coupon for Ordering Patterns

ORDER BLANK FOR PATTERNS

PATTERN DEPT., AMERICAN FRUIT GROWER, 329 Plymouth Ct., Chicago.
Enclosed find _____ cents for which send me the following:

Pattern No. _____	Size _____	Pattern No. _____	Size _____
Pattern No. _____	Size _____	Pattern No. _____	Size _____
Name _____		Size _____	
Address _____		Size _____	
Postoffice _____		State _____	

Be sure to give the pattern number and the correct size.

Kindly Mention American Fruit Grower when writing to Advertisers

American Fruit Grower

again if necessary. The idea is to get a good sturdy bush with much fruiting expanse. It is better to have the bush compact and not too high, as it makes picking easier.

THE FLOWERLESS HOME

By Mrs. Esbe, New York

One wonders what the people are like and what is the nature of the home atmosphere where no flowers are in evidence. Those who truly love flowers will manage to have some, no matter how busy and full the hours are with the necessary tasks.

The housewife with limited time had best plant bulbs or perennials, while coleus makes one of the easiest pot plants for winter and is equally good for bedding out.

The golden glow which has become so common in the past few years, makes an excellent screen for unsightly places, and a few roots once in the ground and protected from chickens, will be a shower of gold for years to follow—and only a few minutes, just once, to place them where wanted.

The iris which blossoms so showily in the spring, will take care of itself for years after being planted. Gladioli need but little care, and pay for themselves so well, besides being very inexpensive, that they are an ideal farm garden flower.

Every year people should add some flowers or fruit to the home grounds. They will certainly receive their reward. Only a few years ago a little woodbine root was planted close to a large woodshed and now one side is hidden by the vine.

I have in mind a farmer who devotes a half hour at the close of every summer day, to his garden. Work in that garden must be a treat with the wealth of perfume that arises from the mass of flowers there.

Already you may plan the Christmas gifts for this year by sowing seed for plants that will begin to blossom next fall, and of kinds that will bloom throughout the winter, also pretty foliage plants, which should be trained to a graceful shape.

CAUSE OF SCALD IN STORAGE

By C. H. Sprague, Ohio

The cause for the appearance of scalded fruit in the spring of the year, is not understood by many people. Scalding refers to the change which occurs in many apples after a period in cold storage in which the color of the apple assumes a dark, baked-apple appearance. The market value of such fruit is greatly lowered, and most times such fruit results in a loss.

That the scalding of apples in cold storage is due to the immaturity of the apples stored and not so much to storage house conditions, has been proven by recent investigations. It has been shown that in fruit, any portion of which still retained its light green color or leaf green, that portion was scalded in storage. In the case of the red apples many growers pick them when only one side shows a red color and perhaps the other side still retains its leaf green. An apple of this type is immature and is almost sure to scald after being in storage a period of time.

Color values must be studied to determine when a fruit is ripe. In a mature apple, take for instance the Rome Beauty, there is only a small green portion on the part of the fruit not highly colored. This is found on the side most shaded by the foliage of the tree. The intensity of the leaf green is much less than in immature fruit and the ground color has become a white or yellow color. By cutting a fruit in two pieces, the cross section of the immature fruit shows a distinct green color while in the mature specimen the flesh of the fruit shows a yellow tint. In storage trials with Rome Beauty the immature apples have shown a deep discoloration on the outside and, when cross sectioned, several layers of cells just below the skin had ceased to function and had become discolored. The mature apples showed no discoloration, only a deepening of the yellow in the ground color, while the cross section also showed no discoloration, but there was an increase in the yellow tint of the flesh, characteristic of the maturing of the variety.

Keep Tips From Rooting

Raspberries are much easier to keep in check, for they root from tips, and if the canes are cut back when they get a couple of feet high and made to branch, and then the tips are not given a chance to root, there will be no chance for new plants to bother. Dewberries root the same way, but they are trailers and it is not so easy to keep them from getting their tips to moist ground.

All berries are better for having the canes that have borne fruit removed as soon as the spring fruiting season is over, and new growths have a good start. This leaves the strength of the plant to go into the new wood. The old canes are of no use after once fruiting, as they never bear fruit the second time.

Old wood should be cut away and burned at once to get rid of any insects or disease germs. All weak growths should be cut out, too. Pinching the tips of both blackberries and raspberries when the canes are two or three feet in height, according to their vigor, makes them branch freely, and then the strongest branches can be pinched

GIRLS' TRACTOR CLUB

Foreseeing that there will be a shortage of men next season to run the increased number of tractors which will be used by the farmers, the Girls' Tractor Club has been formed in Salina, Kas., and it is said that these able and enterprising young women hope to start a similar club in Topeka, Kas.

NO MORE PUNCTURES OR BLOW-OUTS

Perfect Tire Filler Takes Place of Air.

The entire automobile industry has received with considerable satisfaction, the announcement that the answer to the pneumatic tire problem has been found, and the most interesting feature of this announcement is the fact that the statement is not based on theory, but on actual fact, inasmuch as the new tire filler which will replace air has been put to practical test covering a period of over 5 years and is already in use by over 50,000 automobile owners. This resilient filler is not a liquid, and no inner tubes are used. The material possesses great resiliency, rides like air yet is not effected by punctures; will not blow out and doubles the life of tires. No spare tires or spare rims are needed. It differs from other so-called tire fillers in that it will not flatten or harden and is not effected by either heat or cold.

Tests made by the Ford Owner's Club, Widney Resiliometer, Technical Universities and over 50,000 users prove that this remarkable tire filler rides like air over the roughest roads and every indication points to its acceptance and adoption by the automobile industry as a successor to air in automobile tires.

The material is called Essenkey and is manufactured by The Essenkey Products Co., 67-220 W. Superior St., Chicago, Ill. Mr. J. A. Jonson, Sales Mgr., is offering a free trial to car owners of this wonderful material with a view of having car owners test it at the manufacturer's risk and then tell others of its wonderful merits. Auto owners should write Mr. Jonson at the address above for details of his free trial offer.—Adv.

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Cushman Light Weight Engines

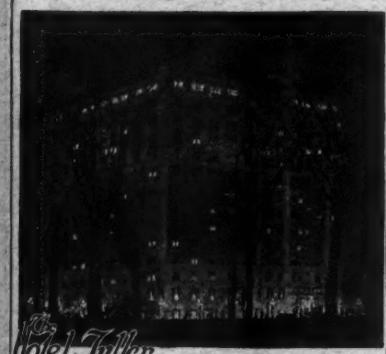


Easy to Move From Job to Job

Weigh Only One-Fourth As Much as ordinary farm engines, but run much more steadily and quietly, like automobile engines. Light weight and higher speed mean more jobs, easier handling and less waste of material and gasoline.

4 H.P. for Spraying and other farm work. Weighs only 190 lbs. Easy to mount on wagon or cart, or may be used with any power sprayer. 8 H.P. double cylinder weighs only 320 lbs. Also 15 and 20 H.P. sizes. Ask for book on Light Weight Engines.

Cushman Motor Works, 955 N. 21st St., Lincoln, Neb.



Hotel Tuller
Detroit
Offers An
Attractive Monthly Rate

For Rooms or Apartments for the Winter

CAFETERIA PAR EXCELLENCE
Self ServiceMEN'S GRILL
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\$1.75 AND UP

HOTEL TULLER

600 Rooms

Livestock and Dairy



Why Sheep Keeping Is Profitable

1. The initial investment in foundation stock is small.
2. Expensive buildings are not necessary.
3. Expensive machinery is not required.
4. Less productive land can be utilized.
5. Sheep will eat and relish almost every class of weeds.
6. By eating "Ragwort" the source of "Pictow" cattle disease is eliminated.
7. By cleaning out the fence rows sheep destroy the winter protection of many injurious insects.
8. Due to the fineness of the mastication of their food, very few weed seeds are found in sheep droppings.
28. The western sheep ranches are rapidly disappearing and it is up to the small farmers to make up the deficiency.
29. The population of the United States is increasing, while the number of sheep is steadily decreasing.
30. As a patriotic duty in the present world crisis, we must produce more wool and mutton.

SKIM MILK PROBLEM SOLVED

A new product called "Hebe" promises to supply the dairyman with a demand for all the skim milk that he can dispose of. This new market for skimmed milk at an increased price, will eventually benefit the



Many Fruit Growers Find Sheep To Be a Profitable Side Line.

9. Sheep are of great value in clearing brush land.
10. Sheep are dual purpose animals.
11. Crop yields are increased by the constant and uniform distribution of rich manure.
12. The excreta of sheep is rich in nitrogen and potassium.
13. Less plant food is removed from soil by sheep than by grain crops.
14. The cost of maintenance is small.
15. Sheep make profitable use of fodder left in cornfields after corn is harvested.
16. Sheep can be made marketable without grain.
17. Wool and lambs are more easily transported than grain crops.
18. Rapid and frequent monetary returns.
19. Reasonably large percentage of profits under normal conditions.
20. Wool and mutton advanced in price before the war and a sudden drop in value is not to be expected.
21. Less labor is required on a sheep farm than on a grain farm.
22. Labor on the farm is more evenly distributed throughout the year.
23. Sheep require little care except during the usual slack periods.
24. Children as a rule like sheep and this is a good time to develop future shepherds.
25. A flock of sheep on a farm furnishes a fresh supply of meat at any time of the year.
26. Because of the comparatively low cost per animal, sheep are more easily improved than most other types of livestock.
27. Sheep are more prolific than horses and cattle.

whole country. At present its benefits are confined to those sections of the country where "Hebe" is manufactured.

The disposition of skim milk has always been something of a problem on the dairy farm. When there was nothing better to be done with it the dairyman fed it to his pigs. Yet there has always been the feeling that the pigsty is not the fitting destination for one of the finest of human foods.

With the exception of butterfat, skimmed milk is just as good food as when it left the cow's udder, and in the production of "Hebe" evaporated skim milk is combined with vegetable butterfat from coconut oil, so that it becomes again a perfectly balanced ration for human consumption.

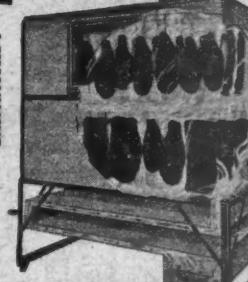
No longer will it be profitable for the farmer to feed skimmed milk to the pigs. It will make them grow, of course, but they cannot return him in increased weight the value of his skim milk now that there is such a greatly increased demand for it. Just as "Hebe" offers the housewife a welcome adjunct to her supply of cooking aids, so does it offer the dairyman a new and important outlet for skimmed milk.

"Hebe" is evaporated skimmed milk and butterfat, and is sold for just what it is, in cans clearly and properly labeled. It is not designed as a beverage, but as an aid in cooking, as Crisco is used in place of lard. There seems no possibility that the dairyman will find in it a rival. In the first place the manufacture of "Hebe" itself demands a larger supply of milk than was needed previously. In the second place there is a greater demand than ever before for dairy products, not only in America, but in Europe as well, which must now import much that it produced at home before the war.

NATIONAL GIANT PORTABLE SMOKE HOUSE



Beware of Imitations!



This is the Original National Giant Smoke House

Don't Sell All Your Hogs

Save a few and be sure of good meat for your own use when want it. You can do it easily with the National Giant Smoke House. This wonderful Smoke House is portable, can be brought into basement or kitchen and operated same as a stove or on the back porch, or in the yard—anywhere.

Operates on sawdust and cobs, and little hickory bark for seasoning. Gives you better, sweater, cheaper meat than you've ever had before. Hundreds in use all over U. S., Canada, Cuba, S. America.

A 5-YEARS' SUCCESS

Provides the best way of smoking hams, bacon, sausages. Made in 3 sizes. Guaranteed.

After smoking meats, use for Store house. Absolutely bug and mice proof.

Keeps meat sweet all summer. Worth its price many times—for this feature alone.

GET FREE BOOK

Learn all about this wonderful new way of smoking meat. Book tells when to butcher, about storage, how and when hams operate, etc. Also gives various cooking recipes for curing Hams, Bacon, Sausages at home. Write for book, get low prices today, sure.

Portable Elevator Mfg. Co.
516 McClure St., Bloomington, Ill.

\$19.95 ON UPWARD TRIAL
American
FULLY GUARANTEED
CREAM SEPARATOR

A Solid Proposition to send now, well made, easy running, perfect skimming separator for \$19.95. Skims warm or cold milk; heavy or light cream. Different from picture, which shows larger capacity machines. See our plan of

MONTHLY PAYMENTS

Bowl a sanitary marvel easily cleaned. Whether dairy is large or small, write for free catalog and monthly payment plan. Western orders filled from western points.

AMERICAN SEPARATOR CO.
Bainbridge, N. Y.

COLLINS JERSEY RED
the best
pig
bred
375 lbs. in
9 monthsOnly \$2 DOWN
ONE YEAR
TO PAY
\$38 Buys the New Butterfly Jr. No. 2½.
Light running, easy cleaning,
close skimming, durable.

NEW BUTTERFLY
Separators are mounted on a liftable
frame, deflected in manure and worm
traps. Made also in four larger sizes all sold on
30 Days' FREE TRIAL.

and on a plan whereby they earn their
payments by the use of their separator. Payment
comes Free Capital Folder. Buy from the
manufacturer and save money.

Albright-Dozer Co., 2348 Marshall St., Chicago

RAISE BELGIAN HARES
HUGE PROFITS easily and pleasantly made. We
furnish stock and pay you 50¢ a
month for each pair until you have
a profit of \$100.00. Nothing free.

NATIONAL FOOD & FUR ASSOCIATION
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BROWN'S
BARGAIN
FENCE
BOOK

JUST OUT—My New "direct
from factory" Bargain Book
on Fences and Gates gives
you a whole competition. Values
bigger than ever. Get it today.
I Pay ALL Freight
Brown Fences last longest be-
cause built strongest, stiffest.
All wire and zinc, heavily
galvanized. 150 sizes. Also
Gates, Lawn Fences and Barb
Wire at bargain prices.
Sample and book free, postage
paid. Brown Fence & Wire Co., Dept. 229, Cleveland, O.

Traffic Truck

4,000 LBS. CAPACITY

The Truck You Need at the Price You Want to Pay

Every day drives home the need of the time-saving, labor-saving service you can get from a Traffic Truck. Hauling produce, livestock, milk or fruit to market—delivering material around the farm, it meets all demands.

The Traffic's 4,000 lbs. capacity will handle the greatest variety of loads with entire efficiency and at lowest cost. It operates as easily as most passenger cars, with ample power for any road conditions.

Built of standardized units—strong, sturdy, dependable as sunrise. Quantity production on a single model makes the Traffic price, \$1395, possible—lower than any other truck of similar capacity.

Don't make up your mind on a truck before you've investigated Traffic. Don't buy until you've seen it demonstrated. If there is no Traffic dealer in your town, write us for address of nearest dealer.

Traffic Motor Truck Corporation, St. Louis, U. S. A.
Chassis \$1395 f. o. b. St. Louis



"As Good as an Irrigating Plant"

"If I had to do without most of my farm tools," writes Geo. E. Koplin, Winter Haven, Fla., "I would hang on to the 'Acme' Pulverizing Harrow to the last, as I deem it the most serviceable tool that I own. It is as good as an irrigating plant in dry weather." An

"Acme" Pulverizing Harrow

is the ideal tillage tool for the orchard. "The Coulters Do the Work." They overturn the weeds and leave a protective mulch. By using an extension model, you can work right under the branches and close up to the trunks. "Acme" Pulverizing Harrows are in constant use at leading nurseries and by successful orchardists. The Hun has wantonly destroyed the orchards of France and Belgium. American orchards must produce more to make up the loss. An "Acme" will help you do your share.

Ask your dealer to show you "Acme" Harrows—any size from 1-horse to 4-horse. He should have a stock on hand. But you need our latest catalog, which tells how to make perfect seed beds. Send for it today; also ask for special circular on the "Acme" Disc Harrow.

Duane H. Nash Inc.
121 Elm Street
Millington, N. J.

The Farm Orchard

Daniel Leatherman, Mishawaka, Ind.

The past twenty or thirty years have proved so destructive to fruit orchards in most sections as greatly to discourage farmers from planting, either to grow an orchard, or to replace one that has been destroyed. The most dangerous and destructive agent to the fruit orchards is the scale. This, however, should not discourage anyone from setting out an orchard, as the scale can be successfully combatted. While it may not be wise for the general farmer to plant very extensively fruit trees for the growing of fruit for market, he should by all means plant in a moderate way for home use.

Some varieties may be found in every section which, in spite of unfavorable seasons and conditions, have proven fairly satisfactory and reliable. Nurserymen can generally be depended upon to give correct advice as to the sorts which are adapted to any given location.

Spring or Fall Planting

Our experience has been that there is not very much choice between spring and fall setting of fruit trees. However, all things considered, spring setting is to be preferred, as if set in the fall, the heavy winds of winter are liable to injure the trees because they have not yet had enough time to become thoroughly rooted. Spring setting is especially advisable on stiff, clay soils, as freezing and thawing is disastrous to young trees.

Trees should not be planted hastily. Time should be taken to pulverize the soil, and to straighten each root. In the hurry of spring work this thorough planting is liable to be neglected, and many times the trees are not set as early as they should be.

There is a great temptation with some to select large trees, the idea being that the larger the tree, the sooner it will bear fruit. This is a mistake. The larger the tree, the greater the loss of root in transplanting. This causes a shock to the tree, and the greater the shock to the tree, the longer will be the time required to adapt itself to its new conditions, and to again commence to grow. Sometimes trees never recover from the effect of setting. They may maintain a feeble existence for a year or two, then die.

Get Small, Straight Trees

These conditions are all reversed when small trees are used for setting. The small roots can nearly all be saved, and they at once begin to grow. Small trees are cheaper at the nursery, and this is also an advantage.

Straight and shapely trees should always be insisted on in ordering. We cut the tops back about one-third, and aim to set the trees at least six inches deeper than they stood in the nursery. We use plenty of rotten stable manure in setting, and apply on top of the ground some rotten manure to serve as a mulch. There is an objection to the mulch, however, as it serves as a harbor for vermin. This should be closely watched, and, if necessary, poison should be set for the vermin. Green or raw stable manure should not be used in tree setting. Rotten cow manure we have found the best.

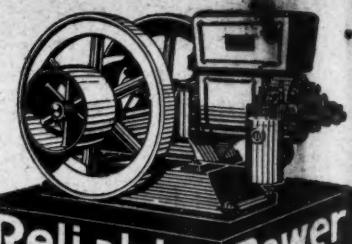
Commercial fertilizers have been proven excellent in orchards, but excessive applications of nitrogen compounds should be avoided, because it favors rank growth of trees at the expense of fruit. When the orchard begins to bear, it should have an annual top-dressing of either rotten stable manure, or commercial fertilizer containing not more than two per cent of nitrogen.

POTASH IN SUNFLOWERS

After harvesting the seed from sunflowers, there is still much of value left, for the plant is rich in potash, and if it is burned the ash will contain a heavy percentage of potash. An acre of sunflowers may yield as high as 4,000 pounds of tops, but if we calculate on 3,000 pounds per acre we should get over 50 pounds of potash per acre in the ash from this weight of sunflower plants. Store the ash in a dry place until ready to use.

ARE YOU ONE OF THEM?

Bernard Shaw says there are only 50,000 people in the world who can think. We think (if we are entitled to think) that Mr. Shaw has said many true things, some of them much more true than the above.



More power, per gallon, from cheap kerosene than from high-priced gasoline. Easy to start in any weather.

PROMPT SHIP-
MENTS
OTTAWA 10 Days Trial

Kerosene Engines

Save big money on price and half on fuel. For all outdoor and indoor work. Thousands in use. All sizes and styles from 1 1/2 H.P. to 22 H.P. Complete mounted saw rigs or saw frames separate, suitable for mounting on your own trucks.

BOOK FREE Easy to understand—Explain all you want to know about engines. Write for FREE Low Prices.

OTTAWA MFG. CO., 1170 King St.
Ottawa, Kansas

Turn Stump Land into Money

Clear your stump land cheaply—no digging, no expense for teams and powder. One man with a K can rip out any stump that can be pulled with the best inch steel cable.

Works by lever—same principle as a jack. 100 pound pull on the lever gives a 40-ton pull on the stump. Made of the best steel—guaranteed against breakage. Endorsed by U. S. Government experts.

HAND POWER **Stump Puller** Showing easy lever operation

Write today for special offer and free booklet on Land Clearing.

Walter J. Fitzpatrick
Box 2
182 Fifth Street
San Francisco
California



No Stump Too Big

You Can Grow a Better Garden



BARKER

Weeder, Mulcher and Cultivator

Kills the weeds and forms a moisture-retaining soil mulch, in one operation. Better work than a hoe, easier and ten times as fast. "Best Weed Killer Ever Used." Gets close to plants. Cuts runners. Guards protect leaves. Has easily attached shovels for deeper cultivation. The BARKER has brought many a garden through dry periods. Let us tell you about it. Send for our FREE illustrated book and factory-to-user offer.

BARKER MFG. CO., Dept. 25, David City, Neb.



Shipped on Approval

This 4½ Passenger 25 H.P. car, 116 in. Wh. base, Goodrich 32 x 3 1/2—Delco Ign.—Dynam. Mfg. and Lig. Write at once for descriptive circular. Price \$1,250.00. Money back guarantee. Drive and demonstrate. Territory open. Prompt shipment. Big money. Cars guaranteed or money back. 1919 cars ready.

BUSH Andrew J. H. Bush, President, Dept. A10, Bush Motor Co., Bush Temple, Chicago, Illinois



PARKER'S HAIR BALM
A toilet preparation of merit.
Helps to eradicate dandruff.
For Restoring Color and
Beauty to Gray and Faded Hair.
50c. and \$1.00 as druggists.

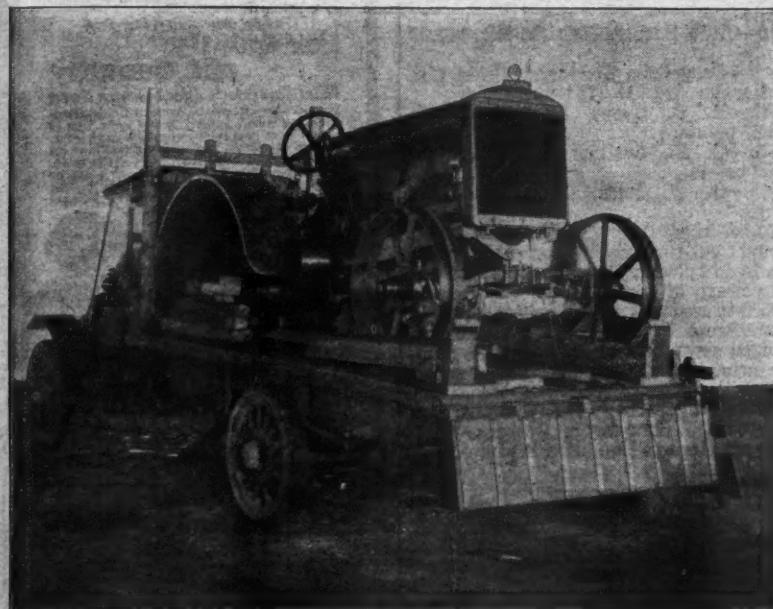
Tractor vs. Percheron

Continued from page 43

to this report, for corn hauled by wagon was 33 cents and by motor truck 15 cents. This seems to bear out the claims that have been made by motor truck manufacturers that hauling could be done by motor trucks at one-half the cost of horse hauling. These figures show in the case of corn that hauling by motor truck cost less than half the expense of hauling by wagon. In the

If, under average conditions as they exist today, motor truck hauling can be accomplished at one-half the cost of team hauling, it would seem to be a foregone conclusion that there will be a greater difference in favor of the truck when all-the-year-hard-roads are available.

The report from which we have quoted showed the average distance of the hauls to be 11.3 miles by motor truck and 9 miles by wagon. The average number of round trips per day were: by wagon 1.2; and by motor truck 3.4.



Shipping a Tractor by Truck

The Craig Tractor loaded on a Republic 1½-ton truck, left Cleveland, Monday, 8th, at 11:30 a. m., arrived at Chicago, Wednesday, 10th, 6:00 p. m., a distance of 374 miles. Weight of tractor without rear wheels, 3,500 pounds. John W. Diederich designed both truck and tractor.

case of wheat the cost of hauling by wagon was just double that of motor trucks, the figures being 15 cents per ton mile by truck and 30 cents by wagon.

An interesting feature of the report for our readers is that a great many more reported on light hauling, such as fruit, poultry, eggs, and vegetables than reported on hauling grain.

Some of the reports mentioned specifically the great importance of the light motor truck for delivering perishable fruits to the shipping station, and some reports claimed that motor trucks were a necessity in localities where fruit growing was carried on on a commercial scale.

That is where the great advantage is to the fruit grower. Not only is the cost per ton mile much less by motor truck than by wagon, but the ability to get fruit to market quickly and with the minimum of jolting means oftentimes the difference between a good profit and a loss.

Future of the Tractor

It is quite evident that a lot of people believe in the future of the tractor. A tractor directory issued last July lists 145 manufacturers of tractors, making 221 different models. How many more there may be by this time we are unable to say, but even with only 221 varieties the man

who isn't too hard to please ought to be able to find one that will suit him.

Investigate Before You Invest

One page of real experience is worth a whole volume of theorizing. For that reason we urge our readers to note carefully the letters we publish from men who have had actual experience in operating farm tractors.

But while much valuable information can be gained by reading these letters, it must be remembered that one man's experience does not prove that another man in another locality would have the same experience (whether it is favorable or otherwise) with the same tractor.

Much depends on conditions. Soils vary in different localities; and even under the same operating conditions one man may get good results where another would fail.

As we have pointed out in another article on the selection of a motor truck, the prospective buyer should investigate quite thoroughly before he invests.

We have no doubt that except in such cases as where a tractor factory is promoted as a stock jobbing scheme, the manufacturers of tractors are honest in their belief that they are offering machines that will give good service.

Unfortunately, however, among the large number that are offered to the trade there are some that are fundamentally wrong; and while they perform seemingly satisfactory under strictly favorable conditions they will not make good in everyday service.

There are conditions, of course, under which the best of tractors should not be expected to operate, but since a farmer cannot always have ideal conditions in which to do his work he wants a tractor that will at least do what may reasonably be expected of it. It is only right that the buyer should have a reasonable guarantee that he is getting what he pays for, and that there should be a responsible party back of the guarantee.

Read again the letter of Mr. Walker on page 26 of the December issue.

Tractor Concerns Hold Schools

Realizing that it is impossible for the farmer to know what he should about tractors before he buys one, unless he has a chance to learn, a number of tractor concerns are arranging for short courses to be held this winter in different places over the country. It is intended that everyone who owns or plans to own a tractor, shall be given a thorough understanding of its construction and operation. This will save an immense amount of worry, time and expense next season, for those who take advantage of the opportunity.

COMING MEETINGS

Texas Horticultural Society

The midwinter meeting of the Texas Horticultural Society will be held at Athens, Tex., January 15-16.

South Dakota Horticultural Society

The annual meeting of the South Dakota Horticultural Society will be held at Sioux Falls, S. D., January 21-23.

Fruit and Vegetable Shippers

The annual meeting of the American Fruit and Vegetable Shippers' Association will be held at the Hotel Sherman, Chicago, from January 31 to February 4, inclusive.

Minnesota Horticultural Society

The Minnesota State Horticultural Society will meet at University Farm, St. Paul, during Farmers' and Home-Makers' Week, which is from December 30 to January 4.

National Tractor Show

The fourth annual National Tractor Show will be held at Kansas City, Mo., February 10 to 15.

West Virginia Society

The meeting of the State Horticultural Society of West Virginia, will be held in connection with the general Farmers' Week of the College of Agriculture at Morgantown, W. Va., on January 16-17, 1919.

Missouri Horticultural Society

The annual meeting of the Missouri Horticultural Society will be held during the week of January 20, at Columbia, Mo. This is "Farmers' Week" and a large attendance is expected.

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from your trees if you keep them free from John Apple, Apple, White Fly, etc., by spraying with GOOD'S CAUSTIC POTASH FISH OIL SOAP NO. 3. Kills all tree pests without injury to tree. Fertilizes ground and aids healthy growth. One application controls all insects and Plant Diseases. Write for it today. JAMES GOOD, Original Maker, 2111-15 E. Susquehanna Ave., PHILA.

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GUARANTEED SOILLESS
The germs are killed by a chemical in water in the container. Easy to use, month as easy as ash. Closet guaranteed. Thirty days' trial. Ask for catalog and price.

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FOUR PRIZES OF
\$10, \$5, \$3 AND \$2
FOR
Letters on Electric Lighting Plants

We want to hear from our readers who have installed electric power plants.

In order to get them to write and tell us the use and advantages they get from their electric power plants we will give four cash prizes of \$10, \$5, \$3, and \$2 for the four best letters received by January 31st, on the subject of "Electric Power Plants on the Farm."

We know that many of our readers have installed electric power plants for lighting the home, barns, etc., as well as for power for running suction sweepers, washing machines, churning, sewing machines, fans and pumping water, etc.

Just write a letter and tell us to what uses you put your electric power plant, the advantages to be derived from the use of electricity on the farm, the amount of labor saved, and let the housewife tell us how it has lightened her work in caring for lamps, saving time in sweeping and washing, and how much easier it has made other laborious jobs.

You will be helping others if you will send us your experience. Contest closes January 31st.

Four cash prizes of \$10, \$5, \$3, and \$2.

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If you have a garden you should have this book. It tells you what to plant and how to cultivate and is free on request. Write for it NOW.

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SEEDS



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Write today for Olds' 32nd Annual Catalog
L. L. Olds Seed Co., Madison, Wis.



Kindly Mention American Fruit Grower when writing to Advertisers

Market Gardening

By Daniel Leatherman, Indiana

IT IS one thing to grow a good crop but quite another thing to sell it at a profit.

The market gardener not only wants early crops, but also a continuous and well diversified supply of seasonable products. It is the long, steady pull that tells the story of the year's work. It is not the good crop of this or the poor crop of the other, that determines the question of profit and loss. In a steady run of the entire season, a few dollars more or less each day settles the question, and these few dollars more can only be had by a steady succession of the salable crops, from the earliest to the latest.

Consider the Customer

It may sometimes occur that some of the crops, during a part of the season, will not repay the expense of cultivating, gathering and marketing. Yet, even if they are individually unprofitable, we have found that it pays to carry them, so that customers may learn to depend on us for a full assortment at all times. Our customers are usually easily obtained, but it is not so easy to retain them.

We cannot expect to keep them unless we show them that they can depend on us to supply them regularly with a good quality and good assortment of vegetables. Not only will they depend on us for vegetables, but also fruits, dairy products, poultry and eggs. These products can be made a very profitable side line to market gardening, a fact which is more and more being recognized by the most progressive gardeners.

We cater to a retail trade exclusively, selling to private customers on a regular route from a wagon. The work of marketing in this way is no "snap," but it is a fact that in taking this method we get the consumer's entire dollar, as we do not have to share it with the middleman. If the route is not gone over regularly, or the supply is not kept up so that each customer may obtain just what he may happen to want each day, customers are easily persuaded to buy elsewhere. It is so easy for the housewife to order from the grocer by telephone, that the market gardener must be continually on the watch in order to keep his customers.

A Compact Route

In working up and establishing a route, it is very important that it should be as compact as possible, as time and money are thus saved in two ways—it allows driver and horse to return sooner to other work, and it enables one to visit more customers before competitors may come around. As a rule, unless the route is well established, and unless customers are certain that we are coming, they will not depend on us, and the one who comes first makes the sale.

Our experience has been that a given area, if fertilized with a given amount of fertilizers—whether they be rotted stable manure, commercial fertilizers, or both combined—will yield much better results than the same amount of fertilizers applied to a greater area. Heavy fertilizing, close cropping, and the growing of short season crops, are the three principal elements which make for success in market gardening.

PLEDGE CONTEST FOR INCREASED WHEAT PRODUCTION

The Patriotic Honor Roll and Pledge Contest held under the direction of the Community Millers' Association of America, ended on Nov. 11th.

The way the millers took the message to the farmers, "More Wheat Wanted," was a gratifying revelation of sincerity on the part of all.

The prizes offered by the association were: One gold medal to the miller who secured pledges for the greatest increase of wheat acreage for 1919, one silver medal to the miller who secured pledges for the next greatest increase in wheat acreage for 1919, and one bronze medal to the miller who secured pledges for the third greatest increase in wheat acreage in 1919. All according to certain rules.

In addition to these medals, Mr. L. Freeman, president of the Anglo-American Mill Company, gave three American Midget Marvel Flour Mills to the winners of the gold, silver and bronze medals.

These mills represent a value of over \$10,000, and stimulated rare rivalry among the contestants.

The eight highest on the contest stood as follows:

1st—E. Y. Ogilvie, LaKemp, Okla., 295.91 points.

2d—C. L. Green, Winters, Tex., 202 points.

3d—J. F. Barber, Herrick, Ill., 167.27 points.

4th—Dardanelle Feed and Grain Co., Dardanelle, Ark., 157.73 points.

5th—R. P. Coons, Dayton, Wash., 116.27 points.

6th—C. E. Austin, Thomas, Okla., 88.06 points.

8th—G. W. Mica, Ola, Ark., 75.81 points.

Some interesting statistics have been brought out through this contest. On the hundred of pledges that came in, there was an average of 45.2 men per pledge who agreed to seed new acres of wheat for 1919. There were in all 75,680 farmers who pledged new wheat acreage. Of that number nearly 40,000 are new planters this year. A large majority of these new planters are located in Oklahoma, Arkansas, Texas, Tennessee, and Georgia. Nearly every state in the union is represented in this pledge.

A FERTILIZER SUPPLY

Many orchardists are in the habit of applying a nitrogenous fertilizer to their orchards every year, and have found it profitable and frequently essential to continue the practice.

Owing to the demand of the explosives industries the supply of nitrate of soda was uncertain in war time, and though efforts were made by the government to overcome this, the difficulties to be encountered were many and the results were not entirely satisfactory. There is considerable apprehension among consumers that conditions this year may not be any better, if indeed they are as favorable.

Under these circumstances, it is opportune to note that there is a supply of sulphate of ammonia on the market available for the orchard or other use. Its availability as an orchard application is vouched for by various horticultural authorities, among them Prof. R. B. Cruickshank, assistant horticulturist of the Ohio State Experiment Station, who considers that there is every reason to think it will give satisfactory and profitable returns.

Furthermore, it is a native product, being recovered from coal in the process of making coke in the by-product coke oven. The by-product coke-oven industry has increased largely during the war, not only because it has supplied ammonia for the manufacture of munitions, but also because it has produced toluol, benzol, and phenol for making explosives, as well as coke for making steel. It was classed by the government as one of the essential industries, those who were employed in it being exempted from military service, and its extension was actively encouraged by the government. These circumstances indicate its importance in peace or war as an essential of the nation's industrial structure, and guarantee the permanence of the ammonia supply for agricultural uses from this source.

Furthermore, it is by far the most important source of ammonia production that exists in the country, from an economical point of view, and offers the best prospects of extension and development. One-half the coke already made in the country is treated in by-product ovens, even under present conditions, the ammonia from the other half being lost, so the progress of the industry should be encouraged as conserving our national resources.

NEW BOX APPLE GRADES

At a recent meeting of apple growers at Hood River, Ore., S. S. Boddinghouse of the United States Bureau of Markets, stated that over 80% of the growers favored the new rules. It is proposed to have extra fancy, fancy, and C grades. The latter to include inferior apples and orchard run.

If you have not applied stable manure in the orchard for several years give the trees a dressing of it this winter. Spread over the area covered by the branches.

You Need This Book

in making up your garden planting list. From cover to cover, it teams with true-to-life pictures and descriptions of the choicest vegetables. It is a safe guide in selecting varieties either for home or market.

Gregory's "Honest Seeds" have been the first choice of particular gardeners for 63 years. They are thoroughly tested for vitality and purity—carry "blood" line long controlled by scientific plant breeding.

Send for your copy today—free

For Quality and Quantity

Plant Carpenter's Giant Golden Sweet

It's as delicious as the famous Golden Sweet and much larger, many ears 8 to 10 inches long, yet it ripens only 3 days later. It does not become mealy but remains sweet and succulent until too hard for the table. It will grow 6 ft. high, bearing over three ears each. Large ear, 16c; 1 lb., 55c; 2 lbs., \$1.00 postpaid. Order now and ask for our big free catalog.

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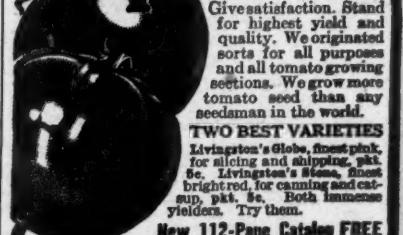
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STAND FOR HIGHEST YIELD AND QUALITY. WE ORIGINATED SORTS FOR ALL PURPOSES AND ALL TOMATO GROWING SECTIONS. WE GROW MORE TOMATO SEED THAN ANY SEEDMAN IN THE WORLD.

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NEW 112-PAGE CATALOG FREE

One of the finest seed catalogs published. Gives detailed descriptions and helpful cultural directions of the most reliable sorts of vegetable, flower and field seeds. Tells when to plant and how to grow big crops. Write for free copy.

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From the Seed-Balls—Headquarters Seed

50 New Varieties can positively be grown from one packet of Hybridized Potato Seeds. Every hill will be different. Growing new and distinct seedlings from the Seed-Ball is intensely interesting. They will be the greatest curiosity of your garden. This seed will produce innumerable new kinds, colors, shapes, sizes and qualities. Some may be of immense value. Packet, with full directions for growing, 10c. Our 1919 Seed Catalog of Choice Selected Seeds sent FREE with each order of Potato Seed. Send orders at once—Stock limited.

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Ask for your copy today before you forget.

JAMES VICK'S SONS
15 Stone Street, Rochester, N. Y.
The Flower City



Vegetable Garden and January

By Benjamin Wallace Douglass, Indiana

SINCE the time when the first man and the first woman found a garden ready created for their use, the human family have been instinctively interested in growing things.

Gardening today, however, is quite a different proposition from what it was in early days of Adam and Eve; and anyone who has spaded, and raked, and planted,



The Old Home Garden

and pulled weeds must realize what a punishment was inflicted on our common ancestors when they were driven out of Eden.

From all accounts that was quite a long time ago and since then, men have done a prodigious amount of digging in the earth and there have been many seed times and many harvests. Think what a lot of work people have put into gardens—and what a lot of joy they have gotten out of them. Because gardening is a joy in spite of the hard work—or because of it; hardly know

If Adam and Eve had such feelings, and you understand I have no doubt but that they did, they have transmitted them down to the present generation unimpaired.

The Joy of Gardening

The joy of gardening today is just as keen as it ever was. It is probably keener and more widespread because of the fact that, in America at least, more people have gardened in the last few years than ever did before.

The food shortage brought on by the war caused the farm gardens to expand, and in the cities caused gardens to spring up in the most unexpected places. This impetus to gardening will not stop with the war. Many people thought it would, but they are the people who have not gardened, and they do not know the excellence of a fresh picked tomato or the sweetness of a home-grown melon. Neither do they realize the difference that a garden makes in the size of the bill down at the corner grocery.

The "War Gardens" of America are an established institution. They have helped the American people to find themselves. We are no longer dependent upon Germany for chemicals and toys. We propose to make our own. In a similar way we are becoming more and more independent in the matter of gardens. We propose to grow our own vegetables. It is just one more thing that the American people have discovered that they could do and do well.

The Home Gardens

It is for those who are interested in home gardens that this department has been established. January, of course, is not much of a month in the garden. It is more of a month to sit around the fire and plan what the garden is to be. Send for a seed catalogue. Better still, send for half a dozen seed catalogues. It pays to do it. Personally I have been gardening for a good many years and I really ought to know just what I intend to plant without looking at a catalogue at all, but I don't.



A Suburban "War Garden"

I which expression is the more correct. As a matter of fact I believe that Adam and Eve enjoyed making their own garden after they got the hang of it. They were making something out of nothing as it were, causing fruits to grow and flowers to blossom where none had been before. They, the first created beings, had in turn become creators, and philosophers, who ought to know, tell us that there is no joy like the joy of creating something new.

Continued on page 58

Possibly that is one reason why my garden is always good—I am willing to take the seedsman's word when he says he has a good new one.

Just that sort of thing happened last year. I thought I had tried out enough varieties of tomatoes to establish what will do best in my particular locality. In Livingston's catalogue, however, I came across a new variety named "Manyfold."

Now For a Bigger Crop!

CATALOG
FREE



Make it a Victory Harvest

With the coming of Victory American farmers must produce the biggest crops ever and big crops mean many extra dollars in profit for the grower. He will get high prices and help will be plentiful. There must be no "Slacker Acres," no crop failure, if human effort can prevent it.

Isbell's Seeds
"As They Grow Their Fame Grows"

For Garden TRADE MARK For Farm

They give you the very best that money can buy at money-saving prices. 40 years experience goes into Isbell's Seeds. Ceaseless experiments, careful selection and testing has produced the most hardy, big yielding varieties. Only the cleanest, purest seed ever reaches an Isbell customer—seeds you can "bank on" being good, full of life and will grow. Every ounce is Guaranteed. You can have your money back if your own tests do not prove satisfactory. This fair and square Isbell policy has made more than 250,000 satisfied buyers of Isbell's seeds. It's money in your pocket to investigate.

1919 Seed Annual Now Ready

It's a true guide for growing a Victory Crop. Shows how quality seeds are selected, cleaned and tested—written by men who have years of experience, and shows how to take the guesswork out of planting. With this book we'll send your choice of any field seeds you may want to test. Mail the coupon—the book and sample seeds are Free.

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Send me 1919 Seed Annual and Free Samples
of the following Isbell's seeds:
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is the title of our 1919 catalogue—the most beautiful and complete horticultural publication of the year—really a book of 184 pages, 8 colored plates and over 1000 photo-engravings, showing actual results without exaggeration. It is a mine of information of everything in Gardening, either for pleasure or profit, and embodies the result of over seventy-two years of practical experience. To give this catalogue the largest possible distribution we make the following unusual offer:

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To every one who will state where this advertisement was seen and who encloses 10 cents we will mail the catalogue.

And Also Send Free Of Charge

Our Famous "HENDERSON" COLLECTION OF SEEDS
containing one pack each of Ponderosa Tomato, Big Boston Lettuce, White Tipped Scarlet Radish, Henderson's Invincible Asters, Henderson's Brilliant Mixtures Peppermint and Giant Waved Spencer Sweet Peas, in a coupon envelope, which when emptied and returned will be accepted as a 25-cent cash payment on any order amounting to \$1.00 and upward.

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STRAWBERRY PLANTS 1,000,000 AT Bargin Prices.

H. GRAF, BERKS CO., PA., says: "I never received such nice plants." Write today for free Catalog about the Strawberry—a money crop.

C. S. PERDUE, BOX 18 - SHOWELL, MD.

STRAWBERRY and FRUIT PLANTS

Ornamental Shrubs and Gladioli Bulbs \$10 for 4 French King Bulbs, and our 1919 BERRY BOOK which tells how to grow plants successfully.

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TWO HUNDRED MILLION people eat foods grown largely by the aid of commercial fertilizer. In United States alone nearly 7,000,000 tons of fertilizer are used annually.

The Fertilizer Industry performs a most valuable service in searching the four corners of the earth for plant foods in recovering waste materials from slaughter houses, factories and cities; in reaching up into the air and down into the bowels of the earth for newer and cheaper forms of raw materials; and then manufacturing the whole into a product, definite in composition and convenient in form.

Without fertilizer, agriculture would deteriorate. With more fertilizer, agriculture will improve. Old theories are being discarded. Have you thought of fertilizing that weedy lawn or waste?

Do you know that fertilizer can help you avoid soft corn? escape the Hessian Fly? overcome drought? save farm labor? get higher prices?

Write for bulletins on fertilizer usage.

Soil Improvement Committee of the National Fertilizer Association
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WANTED—USED TILE MACHINE. Address, Cruser, Montrose, Pa.

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Vegetable Garden and January

Continued from page 57

The Livingston people claimed that it was a good tomato for home use, and although the price was high, I bought a small packet of seed. It proved to be the best tomato for home use that I have ever grown, small but perfect and very solid. If I had not read my seed catalogue I would have missed it.

Some Winter Vegetables

January is a good month to put manure on the garden chiefly because there is more time to do the work now than at any other season and not because of any greater benefit from January fertilizer than from that of any other month. The main thing is to get it on. There are certain garden products that can be enjoyed this month even though their proper growing period has long since passed. Parsnips can be dug on mild days when the ground is not frozen, and if there is a hotbed, lettuce and radishes can be had from seed planted sixty days before.

Just at present I am enjoying a fine crop of "French Endive"—the fancy name for chicory. The roots were grown last summer, lifted in the fall and planted in boxes about the first of November. This is a vegetable that should be more widely grown as a winter salad. It is superior to the best head lettuce and is rather more easily grown. The roots should be planted in deep boxes at intervals as they are needed. In a good cellar they will remain dormant if kept dry. Dirt should be packed firmly around the roots and level with the crowns. The box should be deep enough so that six or eight inches of clean sand can be put in on top of the soil. Plenty of water should be used at the time the roots are planted. As the new shoots come out they are perfectly blanched by the sand and form an almost pure white elongated head, as crisp and tender as the heart of the finest lettuce.

HOW TO TRAP MINK

Mink are most easily trapped along small streams, where the lodges of the driftwood in the crooks and windings of the stream afford fine hiding places for the animals and consequently fine spots for setting traps either in or out of water. But where possible the sets should be made in water and on the lower bank of the stream. A guideway is made of two logs, the traps set in between and on the far side placed a half a dozen drops of the best mink bait. Again, the traps may be set in the water near some weeds or tall grass, and a few drops of good mink bait placed on the weeds or grass.

Other good places to set traps for mink are inside old hollow logs or in the hollow of an old tree close to the stream. The bait should be placed near the trap but not on the trap. In winter the traps should be set near the ripples or thin ice where the mink is most likely to come out.

In working around the traps, gloves and shoes should be scented with the best trail scent in order to remove the effects of the human odor of which the mink are very wary. If a mink den can be discovered and the animals found inside, a good smoker will drive them out so that they may be easily caught.

In preparing mink for the market, they should be stretched pelt side out and all superfluous flesh and fat scraped off. Skins should be dried in a cool, dry place, not near the fire or in the sun.

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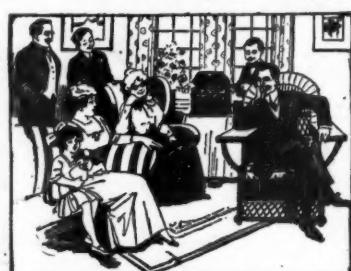
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